SHARP®

SERVICE MANUAL

SE0028LF92H00
Issued: 16th April 2004

AK-45 CHASSIS

MODEL 28LF-92H

In the interests of user safety (required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

In order to service the model 28LF-92H , refer to the AK-45 Chassis Service Manual (SE00AK45CHA00).

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SHARP CORPORATION

This document has been published to be used for after sales service only.

SERVICE MANUAL UPDATE LOG SHEET

Technical Report No. Technical Bulletin No.	Cause / Solution	Part No.	Page No.	Application Data /Serial No.

Use this page to keep any special servicing information as Technical Report (Bulletin), Technical Information, etc.
If only part number changes are required, just change part number directly the part number in the Parts Listing Section.
If you need more information, please refer to the Technical Report (Bulletin).

ELECTRICAL SPECIFICATIONS

•Power Input ..... 220V-240 Volts AC 50 Hz

•Power Consumption
Normal Operation (Method IEC60107) ..... 90 W
Stand-by Operation ..... < 4 W

•Audio Power Output Rating (MPO) / Impedance
Internal Left Speaker ..... 10 W, 7 Ω
Internal Right Speaker ..... 10 W, 7 Ω

•Speakers
2 ways speaker elliptic (2 pcs) ..... 50 x 120 mm

•Picture Intermediate frequency 38.9MHz

•Sound Carrier Trap 32.9MHz

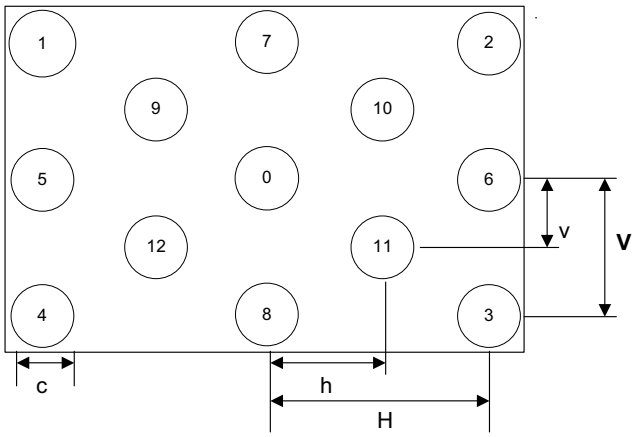
•Adjacent Sound Carrier Trap 40.9MHz

•Adjacent Picture Carrier Trap 30.9MHz

•Aerial Input Impedance
VHF/UHF ..... 75 ohm Unbalanced

•Tuning Ranges ..... 45.75MHz thru 855.25 MHz
VHF: IR A - J / CC01-CC68 (Hiperband)
UHF: I21 - I69 CH

•Convergence (Maximum Misconvergence)



Position of measuring points on the screen

Distance of measuring points (mm)	
H (2h = H)	270
V (2v = V)	140
c	10

Admissible misconvergence in X - and Y - direction (mm)

Measuring points		misconvergence
Centre	0	0.4
Corner points	1 ; 2 ; 3 ; 4	1.8
Medium points	9 ; 10 ; 11 ; 12	1.4
right, left	5 ; 6	1.2
top, bottom	7 ; 8	1.2

•White Level

Apply the rated voltage at the rated frequency to the TV set, while it is receiving full white pattern RF signal of 60 dB/μV from its RF input via the pattern generator.
Turn all picture controls to maximum value. Measure the colour temperatures at the center of the screen by using the colour analyzer.

X=0.290 ± 0.015 Y=0.284 ± 0.015

Specifications are subject to change without prior notice.

WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis.
To prevent electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

IMPORTANT SERVICING NOTES

Only qualified service personnel are allowed to carry out maintenance and repair of this receiver.

Servicing of High Voltage System and CRT

It is important that the static charge is removed from the high voltage system when carrying out work on the receiver. This can be achieved by connecting a 10K resistor (with a suitably insulated lead) from the CRT cavity connector to the CRT ground tag. This must be carried out with the AC supply disconnected from the receiver.

Note the following:

- The CRT in this receiver employs Integral Implosion Protection.
- If the CRT has to be changed it MUST be replaced with the correct type for continued safe working.
- DO NOT lift the CRT by its neck.
- When handing the CRT, ensure that shatterproof goggles are worn.
- Ensure that the CRT is discharge before handling.

X-Ray

This receiver is designed to keep any x-ray emission to an absolute minimum. Some fault conditions and servicing procedures may produce potentially hazardous x-ray radiation levels. This is a problem when in close proximity to the receiver for long periods of time. To reduce any risks associated with this, please observe the following precautions:

1. When undertaking any servicing on this chassis, DO NOT increase the EHT to more than 30 KV, (at a instantaneous beam current of 1800 μA).

2. Ensure that during normal operation the EHT does not exceed 28,15 KV (at a beam current of 1800 μA). This level has been preset in the factory. Always check that this level has not been exceeded after carrying out any repair on the receiver.
3. DO NOT replace the CRT with any other type than that specified in the parts listing as this may cause excessive x-ray radiation.

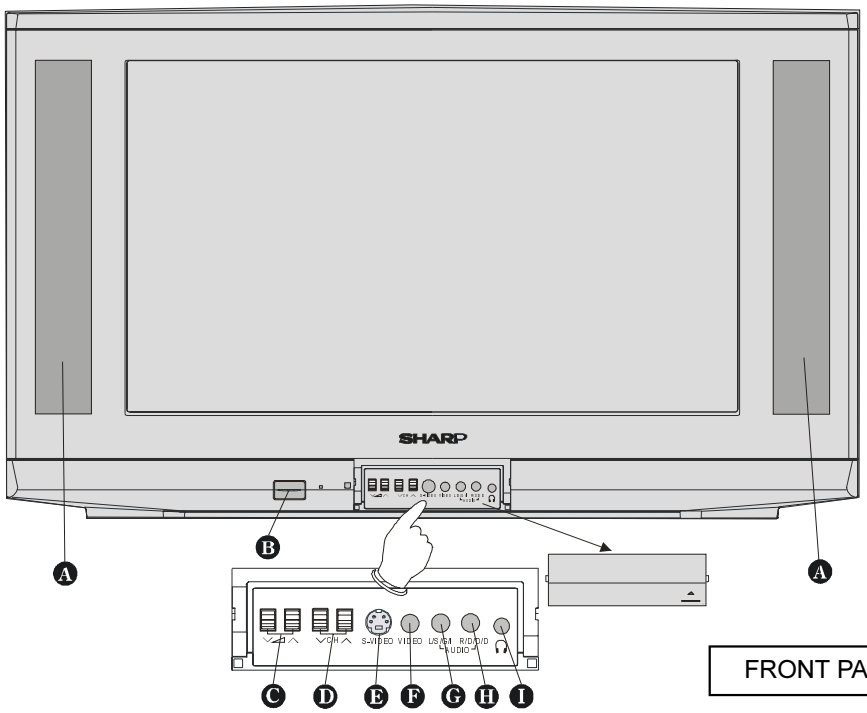
Before returning the receiver to the customer

In addition to the above checks, the following should also be carried out before returning the receiver to the customer.

1. Inspect all the leads to ensure that they are dressed correctly and that they are not obstructed or pinched by any other parts.

2. Ensure that all protective devices are in good condition. These will include nonmetallic control knobs, insulating fish papers, cabinets backs, compartment covers or shields, mechanical insulators, etc.

CONTROLS & TERMINALS



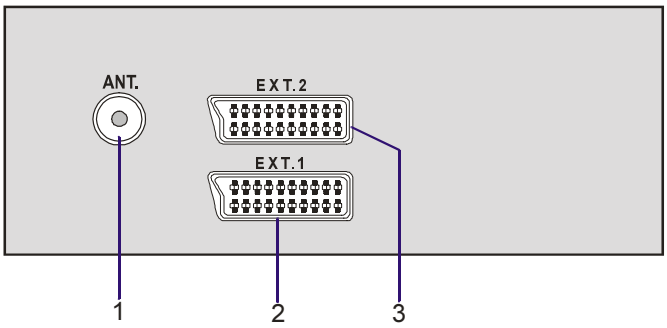
FRONT PANEL

Ⓐ Speakers (left + right)
Ⓑ ⏻ = Power On / Off
Ⓒ ∨ 🔊 ∧= Volume -/+
Ⓓ ∨ **CH** ∧ = Program -/+
Ⓔ **S-VIDEO**
Ⓕ **VIDEO**
Ⓖ **AUDIO L (L/S/G/I)** = Audio left
Ⓗ **AUDIO R (R/D/D/D)** = Audio right
Ⓘ 🎧 = Headphone 3,6 mm Ø

REAR TV
RF Input
1. Aerial terminal

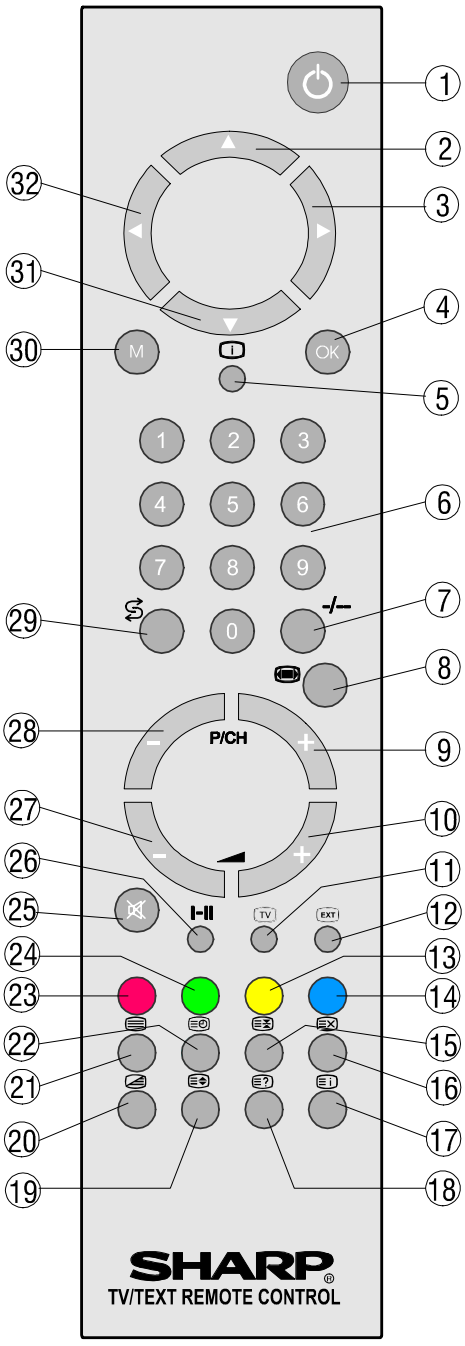
21-pin In/Out

2. 21-pin Audio/Video (RGB) (AV-1) With PAL/SECAM/NTSC Video Input
3. 21-pin Audio/Video (AV-2) With PAL/SECAM/NTSC Video Input



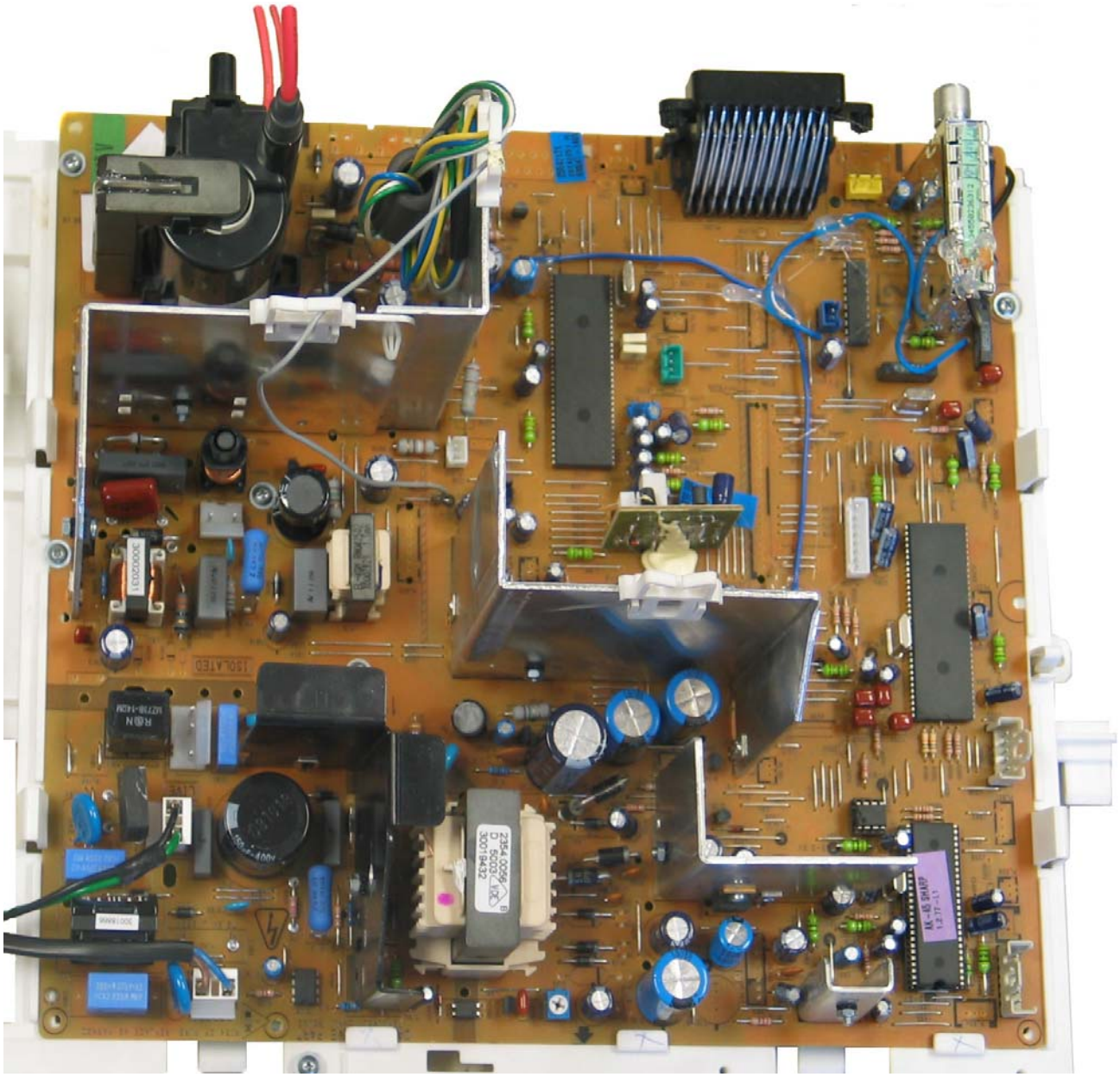
REMOTE CONTROL

① ⏻ = Stand By
② △ = Cursor Up
③ ▷ = Cursor Right
④ OK = OK
⑤ ⓘ = Info (Program Menu)
⑥ **0 - 9** = Direct Program
⑦ **-/--** = Double Digit
⑧ = Wide mode button
⑨ **P/CH+** = Program +
⑩ **+** = Volume +
⑪ TV = TV / Quit Menu
⑫ EXT = EXT button
(**EXT-1, RGB, EXT-2, F-AV, SVHS**)
⑬ **Yellow** = Feature Menu
⑭ **Blue** = Installation Menu
⑮ = Hold
⑯ = Update
⑰ = Index Page
⑱ = Reveal
⑲ = Expand
⑳ = Mix
㉑ = Teletext
㉒ = Time
㉓ **Red** = Sound Menu
㉔ **Green** = Picture Menu
㉕ = Mute
㉖ **I-II** = Mono/Stereo - Dual I-II
㉗ **-** = - Volume
㉘ **- P/CH** = -Program
㉙ = Flash back button
㉚ **M** = Menu
㉛ ▽ = Cursor Down
㉜ ◁ = Cursor Left

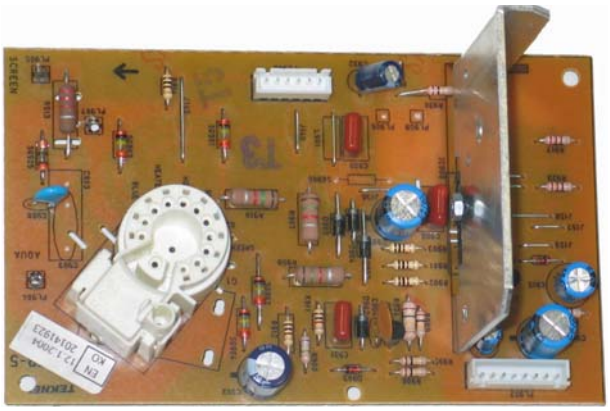


CHASSIS LAYOUT

Mother Unit



CRT Unit



Control Panel Unit

PARTS LISTING

REPLACEMENT PARTS

Replacement parts which have special safety characteristics are identified in this manual. Electrical components having such features are identified by △ in the Replacement Parts Listing.
The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended is not permitted.
Replacement parts not shown in this service manual may create shock fire, or other hazards.

HOW TO ORDER REPLACEMENT PARTS

To have your order completed promptly and correctly please supply the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO. (*)
4. DESCRIPTION
5. CODE
6. QUANTITY

(*) When ordering any part, a "V" should be added before the Part No.

	REF No.	(*) PARTS	DESCRIPTION	SN CODE	EX CODE
			PICTURE TUBE		
△	.	30016948	28" CPT TUBE 16:9 50HZ REAL FLAT	CK	DF
△	.	30029092	28" 16:9 RF DEG COIL&EARTH CB. WO/UL S	AL	AX
			TUNER		
	TU200	30009637	TUNER WSP (PLL) 38.9 MK2 - BATCH	AR	BC
			INTEGRATED CIRCUITS		
	IC1	30001665	IC LM358N	AA	AE
△	IC100	30015087	IC SAFE OPTOCOUPLER TCET1102G	AA	AE
	IC100	30001669	PREAMPLIFIER TFMS1380	AD	AM
	IC101	30001622	IC 7805 (1A)	AB	AF
	IC101	30018063	IC HT48RA0A OTP	AF	AR
	IC102	30001668	IC LM317T	AC	AH
	IC103	30001668	IC LM317T	AC	AH
	IC104	30001500	IC LM7808	AC	AH
	IC106	30011968	IC SMPS MC44608 DIP8	AF	AQ
	IC116	30001506	IC TL431	AC	AH
	IC200	30019492	IC VDP3134Y	AP	BA
	IC201	30001619	IC VIDEO SWITCH TEA6415C DIP20	AM	AY
	IC206	30021082	IC TDA9885T/V3-SO24	AK	AV
	IC301	30016113	IC AAMP TDA7269A 2*14W MULTIWATT11	AH	AV
	IC500	20152368	PR.IC.45-SHARP 1.2.77-L.1	AS	BD
	IC502	20144774	IC 24C16 V065L5214A00000110812	AB	AF
	IC600	30007793	IC STV9379FA	AK	AW
	IC601	30001506	IC TL431	AC	AH
	IC700	30013658	IC MSP3410G SDIP64	AS	BD
	IC704	30001518	IC TDA1308	AE	AP
	IC900	30018768	IC TDA6109	AK	AW
	IC901	30014346	IC 78L05 TO-92 (100mA)	AA	AE
	IC902	30014346	IC 78L05 TO-92 (100mA)	AA	AE
			TRANSISTORS		
	Q1	30001452	TR BC327	AA	AC
	Q100	30001453	TR BC337	AA	AC
	Q102	30001386	TR MTP6N60E (PLASTIC)	AE	AP
	Q103	30001454	TR BC548B	AA	AC
	Q106	30001454	TR BC548B	AA	AC
	Q107	30001428	TR BF423	AA	AC
	Q108	30001457	TR BC848B SMD	AC	AK
	Q109	30001457	TR BC848B SMD	AC	AK
	Q110	30001384	TR MCR22-6	AB	AG
	Q112	30001458	TR BC858B SMD	AA	AB
	Q113	30001457	TR BC848B SMD	AC	AK
	Q114	30001457	TR BC848B SMD	AC	AK
	Q2	30001453	TR BC337	AA	AC
	Q200	30001457	TR BC848B SMD	AC	AK
	Q201	30001457	TR BC848B SMD	AC	AK
	Q202	30001457	TR BC848B SMD	AC	AK

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	Q203	30001457	TR BC848B SMD	AC	AK
	Q208	30001457	TR BC848B SMD	AC	AK
	Q216	30001457	TR BC848B SMD	AC	AK
	Q218	30001458	TR BC858B SMD	AA	AB
	Q220	30001457	TR BC848B SMD	AC	AK
	Q222	30001457	TR BC848B SMD	AC	AK
	Q223	30001457	TR BC848B SMD	AC	AK
	Q3	30001453	TR BC337	AA	AC
	Q4	30001452	TR BC327	AA	AC
	Q500	30001457	TR BC848B SMD	AC	AK
	Q501	30001457	TR BC848B SMD	AC	AK
	Q502	30001457	TR BC848B SMD	AC	AK
	Q503	30001457	TR BC848B SMD	AC	AK
	Q504	30001457	TR BC848B SMD	AC	AK
	Q505	30001458	TR BC858B SMD	AA	AB
	Q508	30001457	TR BC848B SMD	AC	AK
	Q511	30001457	TR BC848B SMD	AC	AK
	Q513	30001458	TR BC858B SMD	AA	AB
	Q600	30001429	TR BUK444-200A	AD	AM
	Q601	30001435	TR NBJT BC639 1A/100V TO92	AA	AB
	Q602	30001441	TR BU2508AF	AE	AP
	Q603	30001458	TR BC858B SMD	AA	AB
	Q605	30001458	TR BC858B SMD	AA	AB
	Q606	30001458	TR BC858B SMD	AA	AB
	Q700	30001458	TR BC858B SMD	AA	AB
	Q703	30001458	TR BC858B SMD	AA	AB
	Q704	30001457	TR BC848B SMD	AC	AK
	Q900	30001427	TR BF422	AA	AE
	Q901	30001458	TR BC858B SMD	AA	AB
	Q902	30001458	TR BC858B SMD	AA	AB
	Q903	30001458	TR BC858B SMD	AA	AB
	Q904	30001458	TR BC858B SMD	AA	AB
	Q905	30001458	TR BC858B SMD	AA	AB
	Q906	30001452	TR BC327	AA	AC
			DIODES		
	D1	30009699	DIODE ZENER SMD BZT55C12	AA	AB
	D100	30001329	DIODE 1N4007 1A/1000V 30A	AA	AB
	D100	30001279	LED RED/GREEN LTL293SJ	AC	AH
	D100	30002733	LED INFRARED IR333	AA	AC
	D101	20108354	DIODE BRIDGE GBU4M 4A/1000V 150A(FORMLU)	AB	AE
	D101	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D102	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D103	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D103	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D104	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D104	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D105	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D105	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D106	30001344	DIODE ZENER 6.2V 1/2W	AA	AB
	D106	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D107	30001371	DIODE ZENER 5.1V ZPD	AA	AB
	D108	30001315	DIODE BYD33D 1A/200V 20A	AA	AE
	D110	30001288	DIODE BYV27-200 2A/200V 50A	AA	AD
	D111	30001323	DIODE BY299 2A/800V 70A	AA	AD
	D112	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D113	30003720	DIODE ZENER BZT55C5V6 5.6V SMD	AA	AB
	D114	30001285	DIODE 1N4148 SMD	AA	AA
	D118	30009366	DIODE UF5402 3A/200V 150A	AB	AF
	D119	30009366	DIODE UF5402 3A/200V 150A	AB	AF
	D121	20092405	CN.ASY.37-DIODE UF5407+FERRITE BAR 5*8	AB	AE
	D125	30001285	DIODE 1N4148 SMD	AA	AA
	D127	30001315	DIODE BYD33D 1A/200V 20A	AA	AE
	D129	30001285	DIODE 1N4148 SMD	AA	AA
	D130	30001329	DIODE 1N4007 1A/1000V 30A	AA	AB
	D131	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D132	30001285	DIODE 1N4148 SMD	AA	AA

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	D133	30003722	DIODE ZENER ZPD15V	AA	AA
	D134	30001285	DIODE 1N4148 SMD	AA	AA
	D2	30009699	DIODE ZENER SMD BZT55C12	AA	AB
	D200	30001285	DIODE 1N4148 SMD	AA	AA
	D204	30001285	DIODE 1N4148 SMD	AA	AA
	D205	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D206	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB
	D207	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB
	D208	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB
	D209	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB
	D212	30001285	DIODE 1N4148 SMD	AA	AA
	D214	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D215	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D216	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D217	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D218	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D219	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D220	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D221Y	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D222Y	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D506	30012412	DIODE ZENER 2.4V SMD	AA	AB
	D601	30001377	DIODE ZENER 33V UZT 33B	AB	AF
	D602	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D603	30001299	DIODE UF5404 3A/400V 150A	AA	AD
	D604	30001299	DIODE UF5404 3A/400V 150A	AA	AD
	D609	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D610	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D611	30007681	DIODE UF5407 3A/800V 150A	AB	AF
	D612	30001285	DIODE 1N4148 SMD	AA	AA
	D613	30001291	DIODE HER107 1A/800V 30A	AA	AB
	D614	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D615	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D617	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
	D622	30001285	DIODE 1N4148 SMD	AA	AA
	D623	30001285	DIODE 1N4148 SMD	AA	AA
	D624	30001285	DIODE 1N4148 SMD	AA	AA
	D625	30001320	DIODE GUC BY228	AB	AF
	D627	30001284	DIODE 1N4148 0.15A/100V 0.5A	AA	AB
	D628	30001285	DIODE 1N4148 SMD	AA	AA
	D701	30007761	DIODE ZENER SMD BZT55C3V6	AA	AB
	D702	30001285	DIODE 1N4148 SMD	AA	AA
	D706	30001285	DIODE 1N4148 SMD	AA	AA
	D902	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D903	30001284	DIODE 1N4148 0.15A/100V 0.5A	AA	AB
	D904	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D905	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D907	30001318	DIODE BA159 1A/800V 20A	AA	AB
	D908	30014353	DIODE BAT85	AA	AC
	D909	30001285	DIODE 1N4148 SMD	AA	AA
	D910	30001285	DIODE 1N4148 SMD	AA	AA
			PACKAGED CIRCUITS		
	X100	30002852	XTAL REZ 455KHZ	AA	AD
	X200	30002851	XTAL 4MHZ L.C=30PF	AC	AH
	X201	30008778	XTAL 20.25MHZ	AB	AF
	X500	30006662	XTAL 6MHZ	AC	AH
	X700	30001756	XTAL 18.432MHZ	AE	AP
⚠			**COILS**		
	L100	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L101	30018866	LINE FILTER SAFE 2X22MH 10mmX12.5mm	AC	AH
	L101	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L102	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L103	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L107(NOT2)	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
	L203	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L206	30001979	FIXED COIL 1UH Q45 M-A	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	L207	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L212	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L213	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L214	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L215	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L216	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L217	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L218	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L220	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L227	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L232	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L236	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L239	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L247	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L251	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L252	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L263	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L264	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L265	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L266	30001987	FIXED COIL 4.7UH Q70 K-A	AA	AB
	L500	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L501	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L502	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L503	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L504	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L505	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
	L506	30006770	FIXED COIL 0.22UH	AA	AB
	L601	30002031	FIXED COIL INJECTION 15MH	AD	AL
	L602	30002156	LINEARITY COIL 30UH 110' (AK19)	AD	AL
	L603	30002829	FIXED COIL BRIDGE 1.5MH	AD	AL
	L700	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L701	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L702	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L703	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L711	30001996	FIXED COIL 22UH Q40 K	AA	AB
	L714	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L715	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
	L717	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
	L719	30001968	FERRITE BEAD (0805) BLM21B201S	AA	AE
			CERAMIC FILTERS		
	Z200	30014261	FILTER SAW K3958M	AF	AR
	Z201	30013163	FILTER SAW K9356	AK	AV
			TRANSFORMERS		
⚠	TR100	30019432	TRF SMPS SAFE AK45 110° (170-270V)	AG	AS
⚠	TR600	30021290	TRF FBT SAFE 110° 50HZ LAYER	AS	BC
	TR601	30002090	LINE DRIVER NEW TYPE	AD	AM
	.	30015614	TRF PFC SAFE 0,9A 42 MH EP	AA	AD
			CAPACITORS		
	C1	30000353	CAP EL 100UF 25V M	AA	AB
	C100	30000190	CAP CER 100PF 50V J CH	AA	AB
	C100	30000352	CAP EL 100UF 16V M	AA	AB
	C101	30000190	CAP CER 100PF 50V J CH	AA	AB
	C101	30012560	CAP SMD 100PF 50V J (0603)	AA	AB
⚠	C102	30000084	CAP MKT SAFE 150NF 275V M AC P=15	AC	AG
	C102	30000190	CAP CER 100PF 50V J CH	AA	AB
	C102	30012560	CAP SMD 100PF 50V J (0603)	AA	AB
⚠	C103	30000094	CAP MKT SAFE 220NF 275V M AC	AA	AB
	C103	30000190	CAP CER 100PF 50V J CH	AA	AB
	C103	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C104	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C105	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C105	30000433	CAP CER 1NF 1KV M B	AA	AB
	C106	30000371	CAP EL 22UF 50V M	AA	AB
	C106	30000290	CAP CER 10NF 50V Z F	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
⚠	C107	30000420	CAP EL 150UF 400V M	AF	AQ
	C107	30000290	CAP CER 10NF 50V Z F	AA	AB
	C108	30000161	CAP MKP SAFE 47NF 630V J	AB	AE
	C109	30000371	CAP EL 22UF 50V M	AA	AB
	C111	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
	C113	30006940	CAP CER 2.7NF 1KV K B	AA	AB
	C114	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
⚠	C115	30000440	CAP CER SAFE 2.2NF 4KV M	AA	AC
	C118	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
	C119	30000090	CAP MKT 22NF 100V J	AA	AB
	C120	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
	C121	30012560	CAP SMD 100PF 50V J (0603)	AA	AB
	C122	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
	C124	30000376	CAP EL 220UF 25V M	AA	AB
	C126	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C127	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C129	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C130	30000436	CAP CER 10NF 1KV ZE	AA	AC
	C133	30018259	CAP EL 4700UF 25V M	AC	AG
	C134	30018259	CAP EL 4700UF 25V M	AC	AG
	C135	30018259	CAP EL 4700UF 25V M	AC	AG
	C137	30000367	CAP EL 1UF 250V M	AA	AB
	C138	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C140	30000393	CAP EL 3.3UF 50V M	AA	AB
	C141	30000359	CAP EL 1000UF 16V M	AA	AC
	C142	30000387	CAP EL 33UF 50V M	AA	AB
	C145	30000375	CAP EL 220UF 16V M	AA	AB
	C146	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C147	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C148	30000360	CAP EL 1000UF 25V M	AA	AE
	C149	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C150	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C152	30000375	CAP EL 220UF 16V M	AA	AB
	C154	30000375	CAP EL 220UF 16V M	AA	AB
	C155	30000375	CAP EL 220UF 16V M	AA	AB
	C156	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C157	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
⚠	C160	30000076	CAP MKT SAFE 100NF 275V M AC	AB	AE
⚠	C161	30000440	CAP CER SAFE 2.2NF 4KV M	AA	AC
	C162	30007708	CAP CER 1NF 1KV K (PULSE)	AA	AD
	C164	30000362	CAP EL 1UF 50V M	AA	AB
	C165	30000362	CAP EL 1UF 50V M	AA	AB
	C166	30000225	CAP CER 220PF 50V J SL	AA	AB
	C168	30000161	CAP MKP SAFE 47NF 630V J	AB	AE
	C170	30012566	CAP SMD 22PF 50V J (0603)	AA	AB
	C171	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
	C172	30000313	CAP CER 22NF 50V Z F	AA	AB
	C173	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C174	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C175	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C176	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C2	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C202	30012643	RES SMD 1/16W 120R J (0603)	AA	AA
	C208	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C209	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C210	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C212	30000352	CAP EL 100UF 16V M	AA	AB
	C213	30012609	CAP SMD 68NF 50V K (0603)	AA	AB
	C214	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C215	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C217	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C218	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
	C222	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C225	30000109	CAP MKT 470NF 63V J	AA	AD
	C226	30000352	CAP EL 100UF 16V M	AA	AB
	C227	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	C229	30000345	CAP EL 10UF 50V M	AA	AB
	C231	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C233	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C234	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C235	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
	C237	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
	C238	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
	C240	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
	C242	30012560	CAP SMD 100PF 50V J (0603)	AA	AB
	C246	30012586	CAP SMD 22NF 50V K (0603)	AA	AB
	C248	30012586	CAP SMD 22NF 50V K (0603)	AA	AB
	C249	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
	C252	30000387	CAP EL 33UF 50V M	AA	AB
	C253	30000345	CAP EL 10UF 50V M	AA	AB
	C255	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
	C258	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C259	30000345	CAP EL 10UF 50V M	AA	AB
	C260	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
	C261	30012588	CAP SMD 33NF 50V K (0603)	AA	AA
	C262	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
	C263	30012588	CAP SMD 33NF 50V K (0603)	AA	AA
	C264	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C265	30000109	CAP MKT 470NF 63V J	AA	AD
	C266	30000109	CAP MKT 470NF 63V J	AA	AD
	C267	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C268	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
	C269	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C270	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C271	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C273	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
	C274	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C275	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C276	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C277	30000345	CAP EL 10UF 50V M	AA	AB
	C278	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
	C279	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
	C280	30000345	CAP EL 10UF 50V M	AA	AB
	C282	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
	C283	30000345	CAP EL 10UF 50V M	AA	AB
	C284	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
	C286	30000345	CAP EL 10UF 50V M	AA	AB
	C287	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
	C288	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C289	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C290	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C292	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C293	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
	C296	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C3	30000353	CAP EL 100UF 25V M	AA	AB
	C300	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C301	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
	C302	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C304	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
	C308	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
	C327	30000109	CAP MKT 470NF 63V J	AA	AD
	C331	30012572	CAP SMD 390PF 50V J (0603)	AA	AA
	C333	30012579	CAP SMD 82PF 50V J (0603)	AA	AB
	C348	30000109	CAP MKT 470NF 63V J	AA	AD
	C349	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C350	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C351	30000345	CAP EL 10UF 50V M	AA	AB
	C352	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
	C353	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
	C356	30000109	CAP MKT 470NF 63V J	AA	AD
	C357	30000345	CAP EL 10UF 50V M	AA	AB
	C358	30000345	CAP EL 10UF 50V M	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C359	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C360	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C361	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C362	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C4	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C5	30000078	CAP MKT 1UF 100V M	AB	AF
C506	30000345	CAP EL 10UF 50V M	AA	AB
C507	30000393	CAP EL 3.3UF 50V M	AA	AB
C508	30000345	CAP EL 10UF 50V M	AA	AB
C509	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C510	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C511	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C514	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C515	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C516	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C517	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C518	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C519	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C520	30012573	CAP SMD 47PF 50V J (0603)	AA	AB
C521	30012573	CAP SMD 47PF 50V J (0603)	AA	AB
C522	30000345	CAP EL 10UF 50V M	AA	AB
C523	30000345	CAP EL 10UF 50V M	AA	AB
C524	30000345	CAP EL 10UF 50V M	AA	AB
C525	30000345	CAP EL 10UF 50V M	AA	AB
C527	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C530	30000375	CAP EL 220UF 16V M	AA	AB
C531	30000393	CAP EL 3.3UF 50V M	AA	AB
C537	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C601	30000351	CAP EL 10UF 350V M	AA	AE
C603	30000402	CAP EL 47UF 100V M	AA	AB
C604	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
C605	30000406	CAP EL 47UF 250V M (HR) 105°	AD	AL
C607	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C608	30000409	CAP EL 470UF 25V M	AA	AD
C609	30000082	CAP MKT 15NF 63V J	AA	AB
C612	30000348	CAP EL 10UF 160V M	AA	AB
C613	30000360	CAP EL 1000UF 25V M	AA	AE
C614	30000360	CAP EL 1000UF 25V M	AA	AE
C616	30023448	CAP MKP 4.3NF 2KV J	AA	AD
C617	30000161	CAP MKP SAFE 47NF 630V J	AB	AE
C618	30000444	CAP CER 470PF 1KV KB	AA	AB
C619	30000367	CAP EL 1UF 250V M	AA	AB
C621	30000136	CAP MKP SAFE 12NF 2000V %3.5	AC	AG
C622	30000137	CAP MKP 15NF 630V J	AC	AG
C623	30000162	CAP MKP SAFE 470NF 250V J	AD	AL
C624	30013003	CAP MKP SAFE 1UF 250V J P=15	AC	AG
C628	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C630	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C631	30000296	CAP CER 100NF 100V Z F	AA	AB
C632	30000074	CAP MKT 100NF 63V J	AA	AC
C633	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C635	30012584	CAP SMD 1.8NF 50V K R (0603)	AA	AA
C636	30009208	CAP CER 470PF 1KV K (PULSE)	AA	AC
C637	30000332	CAP SMD 4.7NF 50V K (0805)	AA	AB
C638	30000092	CAP MKT 220NF 63V J	AA	AD
C643	30000092	CAP MKT 220NF 63V J	AA	AD
C644	30012591	CAP SMD 5.6NF 50V K (0603)	AA	AA
C645	30012591	CAP SMD 5.6NF 50V K (0603)	AA	AA
C646	30000296	CAP CER 100NF 100V Z F	AA	AB
C648	30000069	CAP MKT 1NF 100V J	AA	AC
C700	30000352	CAP EL 100UF 16V M	AA	AB
C701	30000345	CAP EL 10UF 50V M	AA	AB
C702	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C706	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C707	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C708	30000407	CAP EL 470UF 16V M	AA	AC

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C712	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C713	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C715	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C716	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C717	30000092	CAP MKT 220NF 63V J	AA	AD
C718	30000092	CAP MKT 220NF 63V J	AA	AD
C719	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C720	30000345	CAP EL 10UF 50V M	AA	AB
C721	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA
C722	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA
C724	30000345	CAP EL 10UF 50V M	AA	AB
C725	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C728	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C729	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C730	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C731	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C732	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C733	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C734	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C735	30000393	CAP EL 3.3UF 50V M	AA	AB
C736	30000345	CAP EL 10UF 50V M	AA	AB
C737	30000345	CAP EL 10UF 50V M	AA	AB
C738	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA
C739	30000345	CAP EL 10UF 50V M	AA	AB
C740	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C741	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C742	30012565	CAP SMD 1.8PF 50V J CH (0603)	AA	AA
C743	30012565	CAP SMD 1.8PF 50V J CH (0603)	AA	AA
C744	30000345	CAP EL 10UF 50V M	AA	AB
C745	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C746	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C747	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C748	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C749	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C750	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C751	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C754	30000352	CAP EL 100UF 16V M	AA	AB
C763	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C764	30012567	CAP SMD 220PF 50V J (0603)	AA	AB
C765	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C767	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C769	30000345	CAP EL 10UF 50V M	AA	AB
C771	30000345	CAP EL 10UF 50V M	AA	AB
C772	30000345	CAP EL 10UF 50V M	AA	AB
C774	30012567	CAP SMD 220PF 50V J (0603)	AA	AB
C775	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C776	30000352	CAP EL 100UF 16V M	AA	AB
C779	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C781	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C782	30000352	CAP EL 100UF 16V M	AA	AB
C783	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C784	30000362	CAP EL 1UF 50V M	AA	AB
C785	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C786	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C789	30000362	CAP EL 1UF 50V M	AA	AB
C791	30000362	CAP EL 1UF 50V M	AA	AB
C793	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C794	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C795	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C796	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C803	30012573	CAP SMD 47PF 50V J (0603)	AA	AB
C808	30000345	CAP EL 10UF 50V M	AA	AB
C809	30000409	CAP EL 470UF 25V M	AA	AD
C810	30012574	CAP SMD 470PF 50V J (0603)	AA	AA
C811	30012574	CAP SMD 470PF 50V J (0603)	AA	AA
C900	30000075	CAP MKT 100NF 250V K (DC)	AA	AD

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	C902	30000415	CAP EL 4.7UF 250V M	AA	AC
	C904	30000287	CAP CER 10NF 50V K B	AA	AA
	C905	30000350	CAP EL 10UF 250V M	AA	AD
	C906	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
	C908	30000438	CAP CER 2.2NF 2KV	AA	AD
	C909	30000359	CAP EL 1000UF 16V M	AA	AC
	C910	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
	C913	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
	C914	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
	C915	30000407	CAP EL 470UF 16V M	AA	AC
	C916	30000352	CAP EL 100UF 16V M	AA	AB
	C918	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
	C919	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
	C920	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
	C921	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
	C931	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
	C932	30000367	CAP EL 1UF 250V M	AA	AB
	C934	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
	C TUNER	30000285	CAP CER 1NF 100V KB	AA	AA
			RESISTORS		
	R1	30012673	RES SMD 1/16W 270R J (0603)	AA	AB
	R100	30000718	RES CF 1/4W 4.7K J	AA	AB
	R100	30000689	RES CF 1/4W 3.9K J	AA	AB
	R100	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R101	30000896	RES MF 1/4W 160K G	AA	AA
	R101	30000526	RES CF 1/4W 1.5K J	AA	AB
	R101	30000489	RES SMD 1/10W 1R J (0805)	AA	AB
	R102	30000594	RES CF 1/4W 22K J	AA	AB
	R103	30000770	RES CF 1/4W 680R J	AA	AB
	R103	30012509	RES SMD 1/16W 100K J (0603)	AA	AB
	R104	30000594	RES CF 1/4W 22K J	AA	AB
	R105	30000982	RES MF 1/4W 4.7K J	AA	AA
	R105	30000712	RES CF 1/4W 470R J	AA	AB
	R106	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
	R106	30000712	RES CF 1/4W 470R J	AA	AB
	R107	30000712	RES CF 1/4W 470R J	AA	AB
	R108	30000452	RES CF 1/4W 10R J	AA	AB
	R108	30000650	RES CF 1/4W 33R J	AA	AB
	R109	30000650	RES CF 1/4W 33R J	AA	AB
	R110	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R110	30000471	RES CF 1/4W 10K J	AA	AB
	R111	30000808	RES CF 1/4W 82R J	AA	AB
	R112	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R112	30000471	RES CF 1/4W 10K J	AA	AB
	R113	30000808	RES CF 1/4W 82R J	AA	AB
	R116	30001173	RES MO 1W 0.47R J	AA	AB
⚠	R117	30001257	RES MG SAFE 1/2W 4.7M J	AA	AD
	R118	30000580	RES CF 1/4W 22R J	AA	AB
	R119	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R122	30014022	RES SMD 1/16W 47R J (0603)	AA	AA
	R126	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R127	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R129	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R130	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R131	30000886	RES MF 1/4W 1.5K F	AA	AB
	R132	30000886	RES MF 1/4W 1.5K F	AA	AB
	R133	30000880	RES MF 1/4W 130K F	AA	AA
	R134	30000575	RES SMD 1/10W 2K J	AA	AB
	R137	30000481	RES CF 1/4W 1M J	AA	AB
	R138	30000660	RES CF 1/4W 3.3K J	AA	AB
	R139	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
	R140	30001174	RES MO 2W 0.47R J	AA	AB
	R141	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R142	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R143	30020455	RES SMD 1/16W 1.5K F (0603)	AA	AA
	R144	30000480	RES SMD 1/10W 100K J (0805)	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	R145	30020457	RES SMD 1/16W 910R F (0603)	AA	AA
	R146	30012697	RES SMD 1/16W 5.1K J (0603)	AA	AA
	R147	30020455	RES SMD 1/16W 1.5K F (0603)	AA	AA
	R148	30020457	RES SMD 1/16W 910R F (0603)	AA	AA
	R149	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R150	30000466	RES CF 1/4W 1K J	AA	AB
	R151	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
⚠	R152	30001224	RES FUSE SAFE 1/2W 0.22R J	AA	AB
	R153	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R154	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R155	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R156	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R157	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R158	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R161	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R162	30000494	RES SMD 1/10W 120R J (0805)	AA	AB
	R164	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
	R165	30001159	RES MO 1W 0.33R J	AA	AB
	R166	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
⚠	R167	30018085	CAP VAR SAFE 510V K MFCN14D511	AA	AD
⚠	R168	30018085	CAP VAR SAFE 510V K MFCN14D511	AA	AD
	R2	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R200	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R201	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R202	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R203	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R204	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R205	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R206	30000459	RES CF 1/4W 100R J	AA	AB
	R207	30000459	RES CF 1/4W 100R J	AA	AB
	R208	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R209	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R210	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
	R211	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R215	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R217	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R219	30000792	RES CF 1/4W 75R J	AA	AB
	R220	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R221	30000792	RES CF 1/4W 75R J	AA	AB
	R222	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R230	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R231	30000792	RES CF 1/4W 75R J	AA	AB
	R232	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R233	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R234	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
	R235	30000655	RES CF 1/4W 330R J	AA	AB
	R236	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R237	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R238	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R239	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
	R241	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R242	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
	R247	30000500	RES CF 1/4W 12K J	AA	AB
	R248	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R254	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R256	30012655	RES SMD 1/16W 180R J (0603)	AA	AA
	R259	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
	R260	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
	R261	30012677	RES SMD 1/16W 3.3K J (0603)	AA	AA
	R265	30000459	RES CF 1/4W 100R J	AA	AB
	R266	30000459	RES CF 1/4W 100R J	AA	AB
	R267	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R268	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R269	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R270	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R272	30012713	RES SMD 1/16W 75R J (0603)	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R274	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
R276	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R277	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R278	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R279	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R280	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R281	30012673	RES SMD 1/16W 270R J (0603)	AA	AB
R282	30012668	RES SMD 1/16W 220R J (0603)	AA	AA
R283	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R284	30012684	RES SMD 1/16W 330R J (0603)	AA	AA
R285	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R286	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R288	30000770	RES CF 1/4W 680R J	AA	AB
R289	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R299	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R308	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R310	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R316	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R317	30000792	RES CF 1/4W 75R J	AA	AB
R318	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R326	30000815	RES CF 1/4W 8.2K J	AA	AB
R327	30000480	RES SMD 1/10W 100K J (0805)	AA	AB
R330	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R334	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R336	30000466	RES CF 1/4W 1K J	AA	AB
R337	30000466	RES CF 1/4W 1K J	AA	AB
R338	30000466	RES CF 1/4W 1K J	AA	AB
R342	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R343	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R349	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R350	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R351	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R352	30012698	RES SMD 1/16W 5.6K J (0603)	AA	AB
R357	30012644	RES SMD 1/16W 12K J (0603)	AA	AB
R358	30012655	RES SMD 1/16W 180R J (0603)	AA	AA
R359	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
R4	30012677	RES SMD 1/16W 3.3K J (0603)	AA	AA
R400	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
R404	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R406	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
R409	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R411	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R412	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R413	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R414	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R415	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R416	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R417	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R418	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R419	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R420	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R421	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R422	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R423	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R424	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R425	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R426	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R427	30012661	RES SMD 1/16W 2.4K J (0603)	AA	AA
R428	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R429	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R430	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R5	30012642	RES SMD 1/16W 120K J (0603)	AA	AA
R503	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R504	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R505	30000471	RES CF 1/4W 10K J	AA	AB
R506	30000471	RES CF 1/4W 10K J	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R507	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R508	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R509	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R510	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R512	30012668	RES SMD 1/16W 220R J (0603)	AA	AA
R513	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
R516	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R518	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
R519	30000466	RES CF 1/4W 1K J	AA	AB
R520	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
R521	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R522	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R523	30012712	RES SMD 1/16W 8.2K J (0603)	AA	AB
R524	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R526	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R527	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R528	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
R533	30012685	RES SMD 1/16W 33K J (0603)	AA	AA
R535	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R537	30000466	RES CF 1/4W 1K J	AA	AB
R538	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R539	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R540	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R541	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
R548	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R549	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R550	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R553	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R554	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R555	30012506	RES SMD 1/16W 1.5K J (0603)	AA	AB
R556	30012703	RES SMD 1/16W 56K J (0603)	AA	AA
R561	30012982	RES SMD 1/16W 10R J 0603	AA	AA
R564	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R565	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R566	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R567	30000459	RES CF 1/4W 100R J	AA	AB
R568	30000459	RES CF 1/4W 100R J	AA	AB
R571	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R582	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R583	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R585	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R586	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R587	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R588	30012697	RES SMD 1/16W 5.1K J (0603)	AA	AA
R589	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R590	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R591	30012711	RES SMD 1/16W 75K J (0603)	AA	AA
R6	30012673	RES SMD 1/16W 270R J (0603)	AA	AB
R600	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R601	30000470	RES CF 1/2W 10K J	AA	AA
⚠ R603	20147207	CN.ASY.45-R.F.1/2W0.47R+F.B.3.5X4.7X0.8	AA	AB
⚠ R604	30001244	RES FUSE SAFE 1/2W 0.47R J	AA	AB
R605	30000927	RES MF 1/4W 220K J	AA	AB
R607	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R608	30001100	RES MO 1W 150R J	AA	AB
⚠ R611	30001229	RES FUSE SAFE 1W 2.2R J	AA	AC
R612	30000471	RES CF 1/4W 10K J	AA	AB
R613	30001234	RES FUSE 2W 33R J	AA	AC
⚠ R614	30001229	RES FUSE SAFE 1W 2.2R J	AA	AC
R616	30018904	RES MO 5W 4.7k J	AA	AD
R618	30001229	RES FUSE SAFE 1W 2.2R J	AA	AC
R621	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R622	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R623	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R624	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R625	30000480	RES SMD 1/10W 100K J (0805)	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	R626	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R627	30000480	RES SMD 1/10W 100K J (0805)	AA	AB
	R628	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R629	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
	R630	30000872	RES MF 1/4W 120K F	AA	AA
	R631	30000872	RES MF 1/4W 120K F	AA	AA
	R632	30014465	RES SMD 1/16W 2.7K F (603)	AA	AA
	R636	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R637	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R638	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
	R639	30001162	RES MO 1W 390R J	AA	AB
	R640	30001134	RES MO 2W 2.2R J	AA	AB
	R641	30000965	RES MF 1/2W 0.33R J	AA	AA
	R644	30000649	RES CF 1/2W 33R J	AA	AB
	R645	30000580	RES CF 1/4W 22R J	AA	AB
	R646	30012654	RES SMD 1/16W 180K J (0603)	AG	AS
	R647	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
	R648	30012658	RES SMD 1/16W 1M J (0603)	AA	AA
⚠	R649	30001228	RES FUSE SAFE 1/2W 2.2R J	AA	AB
	R650	30001082	RES MO 1/2W 1K J	AA	AB
	R652	30000848	RES MF 1/4W 1K F	AA	AB
	R653	30012509	RES SMD 1/16W 100K J (0603)	AA	AB
	R654	30012708	RES SMD 1/16W 68K J (0603)	AA	AA
	R655	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
	R656	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R657	30000466	RES CF 1/4W 1K J	AA	AB
	R658	30000466	RES CF 1/4W 1K J	AA	AB
	R7	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R700	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
	R701	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
	R702	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R703	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R704	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R705	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R710	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R713	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R714	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R715	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R718	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R719	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R723	30000459	RES CF 1/4W 100R J	AA	AB
	R724	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R725	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R726	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
	R742	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R746	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
	R747	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R749	30012709	RES SMD 1/16W 7.5K J (0603)	AA	AA
	R753	30014076	RES SMD 1/16W 4.7R J (0603)	AA	AA
	R754	30012709	RES SMD 1/16W 7.5K J (0603)	AA	AA
	R755	30014076	RES SMD 1/16W 4.7R J (0603)	AA	AA
	R756	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R759	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R760	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
	R762	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R763	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
	R765	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
	R766	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
	R793	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
	R794	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
	R815	30012644	RES SMD 1/16W 12K J (0603)	AA	AB
	R817	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
	R818	30000723	RES CF 1/4W 47K J	AA	AB
	R819	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
	R820	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
	R900	30000788	RES CF 1/4W 6.8M J	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	R901	30000459	RES CF 1/4W 100R J	AA	AB
	R902	30000459	RES CF 1/4W 100R J	AA	AB
	R903	30000459	RES CF 1/4W 100R J	AA	AB
	R904	30000535	RES CF 1/2W 150K J	AA	AB
	R905	30000477	RES CF 1/4W 100K J	AA	AB
	R906	30000477	RES CF 1/4W 100K J	AA	AB
	R907	30023197	RES CC 1W 1.5K K	AA	AD
	R908	30023197	RES CC 1W 1.5K K	AA	AD
	R909	30000477	RES CF 1/4W 100K J	AA	AB
	R910	30023197	RES CC 1W 1.5K K	AA	AD
	R911	30000466	RES CF 1/4W 1K J	AA	AB
	R912	30000458	RES CF 1/2W 100R J	AA	AB
	R913	30021483	RES CC 1W 2.2K K	AA	AD
	R914	30000459	RES CF 1/4W 100R J	AA	AB
	R915	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
	R916	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
	R917	30000583	RES CF 1/4W 220R J	AA	AB
	R919	30012644	RES SMD 1/16W 12K J (0603)	AA	AB
	R920	30012698	RES SMD 1/16W 5.6K J (0603)	AA	AB
	R921	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
	R922	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
	R923	30000583	RES CF 1/4W 220R J	AA	AB
	R925	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
	R926	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
	R927	30000583	RES CF 1/4W 220R J	AA	AB
	R928	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
	R930	30000477	RES CF 1/4W 100K J	AA	AB
	R931	30012667	RES SMD 1/16W 220K J (0603)	AA	AB
	R932	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
	R933	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
			MISCELLANEOUS PARTS		
⚠	.	20090585	CHASSIS FRAME 288X (AK37)	AE	AP
⚠	.	20140457	BACK COVER 2862W EKO2GRAY(I)	AS	BD
	.	20141081	SNOW BOX ASSY 2862W RF	AM	AY
	.	20140469	SNOW BOX TOP 2862W	AE	AN
	.	20140470	SNOW BOX BOTTOM 2862W	AE	AN
	.	35000212	SCREW S C ZNSY YSMB 2.9*13	AA	AB
	.	35000212	SCREW S C ZNSY YSMB 2.9*13	AA	AB
	.	35000217	SCREW S C SYF YFMB 3.5*9.5	AA	AB
	.	35004572	SCREW P C AgSYF YSB 4x20	AA	AB
	.	35005084	SCREW C ZN RYAKB 6x30	AA	AB
	.	35005418	SCREW P C ZN YSB 3.5x10 (KN1031 T35X10)	AA	AB
	.	35009300	SCREW P C ZN RYSB 4X16 (R:11)	AA	AB
	.	20144777	CHS.ASSY.45-217C21114121123G1129D	BP	CF
	.	30018087	CNAS 2P/350 TRFPFC DIS W/C	AA	AE
	.	35000217	SCREW S C SYF YFMB 3.5*9.5	AA	AB
	.	35005061	SCREW RB C SK ZN YFMB 2.9*9.5	AA	AA
	.	30006712	FERRITE BEAD 3.5X4.7X0.8	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000182	SCREW C ZN YSMB M3*10	AA	AA
	.	30001964	FERRITE BAR 5*8	AA	AD
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000183	SCREW C ZN YSMB M3*12	AA	AB
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000181	SCREW C ZN YSMB M3*8	AA	AB
	.	35000182	SCREW C ZN YSMB M3*10	AA	AA
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000182	SCREW C ZN YSMB M3*10	AA	AA
	.	30007728	CABLE 1P R2.6 50 W/CLIPS	AA	AC
	.	30009833	CABL 1P/100 SIS	AA	AB
	.	30009833	CABL 1P/100 SIS	AA	AB
	.	30019101	CABL 1P/350 DIS UL1672AWG22	AA	AB

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000182	SCREW C ZN YSMB M3*10	AA	AA
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000181	SCREW C ZN YSMB M3*8	AA	AB
	.	30009005	IC 24C16	AF	AQ
	.	30012631	CNAS 2P/760 DIS W/BL C+FER UL2547 AWG24	AB	AG
	.	30027382	SPEAKER 7R 12W F/R 60x120MM-28&32" SHARP	AE	AP
	.	40016872	SPEAKER BRACKET 286XW	AA	AE
	.	30012632	CNAS 2P/690 DIS W/C+FER UL2547 AWG24	AB	AG
	.	30027382	SPEAKER 7R 12W F/R 60x120MM-28&32" SHARP	AE	AP
	.	40016872	SPEAKER BRACKET 286XW	AA	AE
	.	20151924	MD.ASY.SB112-FAV+HP+SVHS 2862/3262 (AK45	AS	BD
	.	35000136	FUSE HOLDER TK79-A (GRAY)	AA	AD
	.	20152358	FRONT 2862W W/H SLV285S(P)(PW/S)	AT	BE
	.	20152375	CONTROL PANEL DOOR 2862W (SLV285S/P)	AD	AL
	.	20152376	SPEAKER GRILL 2862W SLV285S(P)	AF	AQ
	.	40016871	DOOR SPACER (M10)	AA	AB
	.	40016873	WASHER 2862W	AA	AB
	.	20152474	POWER CORD ASSY.(2.4MT W/BSI) SHARP	AH	AU
	.	30001793	CONN HOUSING 2P 7.5MM TOP	AA	AD
⚠	.	30024554	POWER CORD SAFE BSI 2.2M SHARP W/FLT-FUS	AH	AV
	.	20143026	R/C 1548 SHARP (EKO2GRAY/I) (GRAY/S)	AM	AY
	.	40012331	RUBBER PAD (RC 1542)	AD	AL
	.	50044953	WARRANTY CARD SHARP (ENG)	AA	AE
	.	50048416	I/B SHARP 28LF92H/32LF92H PAK45/1548/ENG	AB	AF
	.	50048654	PAP.I/B QSG SHARP 28-32LF92H	AA	AB
	.	50048658	PAP.I/B CONNEC.G.SHAR.28/32LF92H(ENG)	AA	AC
	.	20152723	LBL.CART.BOX SHARP 28LF92H AK45	AA	AC
	.	20153349	BUTTON ASSY 2862W/3262WRF (SLV285S(P)	AC	AK
	.	20160076	CRT B.ASSY.TP45B-5-SI.FOC.(AK45)SHARP(RF	AR	BB
	.	35000158	NUT C ZN BOTTOM M3	AA	AB
	.	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	AA	AB
	.	35000180	SCREW C ZN YSMB M3*6	AA	AA
	.	30015231	ROTATION COIL AK33 29"	AE	AQ
	.	40016814	LOGO SHARP (D.C.-SILVER)28-32"	AD	AK
	.	50043896	CONTROL STICKER 2862W	AD	AM
	B-B	30009834	CABL 1P/60 SIS	AA	AB
⚠	F100	30001731	FUSE SAFE 2.5A 250V 5*20MM	AA	AC
	J344	30001996	FIXED COIL 22UH Q40 K	AA	AB
	JK100	30026584	TV JACK BOARD JXTI046	AG	AS
	JK101	30001902	JACK HEADPHONE STEREO WO/SW	AC	AH
	NOT	30011742	CABL 1P/25 SIS	AA	AB
	PL1	30001912	PIN F 5P/2.5MM (11.5MM)	AA	AD
⚠	PL100	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
⚠	PL100	30020822	CNAS 6P/450 FLT W/C+FER UL2468AWG24	AC	AG
⚠	PL101	30001795	CONN HEADER 3P 5/7.5MM TOP WHT	AA	AC
⚠	PL101	30001838	CONN HEADER 3P 2.5MM TOP YELLOW SD	AA	AC
⚠	PL101	30020137	CNAS 600 FAV SVHS W/DC+FER	AF	AQ
	PL102	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
	PL102	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	AA	AB
	PL102	30020137	CNAS 600 FAV SVHS W/DC+FER	AA	AB
	PL103	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	AA	AC
	PL103	30020137	CNAS 600 FAV SVHS W/DC+FER	AA	AB
	PL104	30008726	CNAS 3P/550 FLT W/BLK C UL2468AWG24	AB	AF
	PL107	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
	PL107	30014711	CNAS 2P/250 W/DC	AB	AF
	PL108	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
	PL2	30001829	CONN HEADER 2P 2.5MM TOP WHT SD	AA	AB
	PL204	30010921	DOUBLE-DECK SCART SOCKET	AD	AM
	PL206	30010039	CONN HEADER 8P 2.5MM TOP WHT	AA	AB
	PL207	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	AA	AB
	PL500	30001783	CONN HEADER 5P 2.5MM TOP BD	AA	AC
	PL502	30001784	CONN HEADER 6P 2.5MM TOP BD	AA	AC
	PL509	20108005	MD.ASY.RT45-ROTATION (TILT) AK45	AD	AM

	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
⚠	PL602	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
	PL603	30001829	CONN HEADER 2P 2.5MM TOP WHT SD	AA	AB
	PL603	30019083	CNAS 2P/600 SIS W/C+FER UL1007AWG24	AB	AF
⚠	PL604	30001850	CONN HEADER 6P 2.5MM TOP WHT SD	AA	AC
	PL703	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	AA	AC
	PL708	30001762	CONN HEADER 2P 2.5MM(9.7MM) TOP	AA	AC
	PL709	30001764	CONN HEADER 2P 2.5MM(9.7MM) TOP BLACK	AA	AC
	PL711	30001836	CONN HEADER 3P 2.5MM TOP BLACK SD	AA	AB
⚠	PL901	30028447	SOCKET CRT SAFE NARROWNECK W/GND INCHANG	AA	AE
	PL902	30010039	CONN HEADER 8P 2.5MM TOP WHT	AA	AB
	PL902	30027546	CNAS 5P/350 SHL+3P/350 SIS RGB W/DC+FER	AD	AM
⚠	PL903	30001850	CONN HEADER 6P 2.5MM TOP WHT SD	AA	AC
⚠	PL903	30030432	CNAS 6P-4P/500+1P/850 SIS W/3C+FR UL1007	AA	AC
	PL905	35000135	TEST PIN 1.1MM	AA	AB
	PL909	35000135	TEST PIN 1.1MM	AA	AB
	S224	30000452	RES CF 1/4W 10R J	AA	AB
	S225	30012982	RES SMD 1/16W 10R J 0603	AA	AA
	S226	30012982	RES SMD 1/16W 10R J 0603	AA	AA
	S227	30012982	RES SMD 1/16W 10R J 0603	AA	AA
	SG901	30000428	SPARK GAP 300V	AB	AG
	SG902	30000428	SPARK GAP 300V	AB	AG
	SG903	30000428	SPARK GAP 300V	AB	AG
	SG904	30000428	SPARK GAP 300V	AB	AG
	SG905	30021532	SPARK GAP 1500V	AC	AG
	SW100	30002181	SWITCH TACT(4)	AA	AC
	SW101	30002181	SWITCH TACT(4)	AA	AC
	SW102	30002181	SWITCH TACT(4)	AA	AC
	SW103	30002181	SWITCH TACT(4)	AA	AC
⚠	SW104	30017848	SWITCH SAFE ON/OFF 4A/128A JVC(PANASONI)	AC	AH
⚠	TH101	30001268	THERMISTOR 3P	AD	AM

By this access you can consult the latest schematic diagram or request the Parts Listing of a concrete Production Date / Serial Number.

By this way it can be also consulted the issued Technical Reports (Service Bulletins).

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1.INTRODUCTION

11AK45 is a 50Hz colour television capable of driving 24" + CRT sizes(beginning from 24" 16:9 up to 33").
The chassis is capable of operation in PAL, SECAM, NTSC (playback) colour standards and multiple transmission standards as B/G, D/K, I/I', and L/L'.
Sound system output is supplying 2x10W (10%THD) for left and right outputs of 8ohm speakers.
TV supports FASTTEXT. It is possible to decode transmissions including high graphical data.
The chassis is equipped with three full EuroScarts, only one of them supports RGB input, one headphone output, one FAV input, one SVHS input (via SCART)

2.TUNER

The hardware and software of the TV is suitable for tuners, supplied by different companies, which are selected from the Service Menu. These tuners can be combined VHF, UHF tuners suitable for CCIR systems B/G, H, L, L', I/I', and D/K. The tuning is available through the digitally controlled I²C bus (PLL). Below you will find info on one of the Tuners in use.

General description of UV1316:
The UV1316 tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1316:
1. Member of the UV1300 family small sized UHF/VHF tuners
2. Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
3. Digitally controlled (PLL) tuning via I²C-bus
4. Off-air channels, S-cable channels and Hyperband
5. World standardized mechanical dimensions and world standard pinning
6. Compact size
7. Complies to "CENELEC EN55020" and "EN55013"

Pinning:

1.	Gain control voltage (AGC)	:	4.0V, Max: 4.5V
2.	Tuning voltage		
3.	I²C-bus address select	:	Max: 5.5V
4.	I²C-bus serial clock	:	Min:-0.3V, Max: 5.5V
5.	I²C-bus serial data	:	Min:-0.3V, Max: 5.5V
6.	Not connected		
7.	PLL supply voltage	:	5.0V, Min: 4.75V, Max: 5.5V
8.	ADC input		
9.	Tuner supply voltage	:	33V, Min: 30V, Max: 35V
10.	Symmetrical IF output 1		
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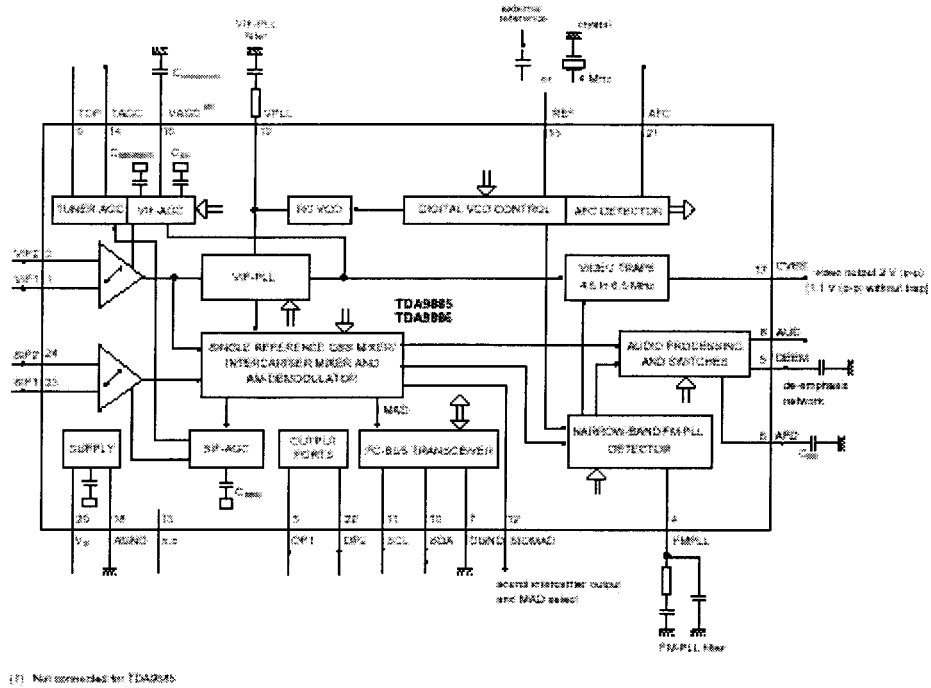
3.IF PART (TDA9885/86)

The TDA9885 is an alignment-free single standard (without positive modulation) vision and sound IF signal PLL.
The TDA9886 is an alignment-free multistandard (PAL, SECAM and NTSC) vision and sound IF signal PLL
Both devices can be used for TV, VTR, PC and set-top box applications.
The following figure shows the simplified block diagram of the integrated circuit.
The integrated circuit comprises the following functional blocks:
VIF amplifier, Tuner and VIF-AGC, VIF-AGC detector, Frequency Phase-Locked Loop (FPLL) detector, VCO and divider, Digital acquisition help and AFC, Video demodulator and amplifier, Sound carrier trap, SIF amplifier, SIF-AGC detector, Single reference QSS mixer, AM demodulator, FM demodulator and acquisition help, Audio amplifier and mute time constant, I²C-bus transceivers and MAD (module address), Internal voltage stabilizer.



4.VIDEO SWITCH TEA6415

In case of three or more external sources are used, the video switch IC TEA6415 is used. The main function of this device is to switch 8 video-input sources on the 6 outputs.
Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals).
Each nominal gain between any input and output is 6.5dB.For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external Resistor Bridge). All the switching possibilities are changed through the BUS. Driving 75ohm load needs an external resistor. It is possible to have the same input connected to several outputs.

5.MULTI STANDARD SOUND PROCESSOR

The MSP 34x10G family of single-chip Multi-standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip.
The DBX noise reduction, or alternatively, MICRONAS Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

6.SOUND OUTPUT STAGE WITH TDA7269A

The TDA7269A is class AB dual Audio power amplifier assembled in the Multi-watt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

7.BERTICAL OUTPUT STAGE WITH STV9379FA

The IC STV9379FA is the vertical deflection booster circuit. Two supply voltages, +14V and −14V are needed to scan the inputs VERT+ and VERT-, respectively. And a third supply voltage, +60V for the flyback limiting are needed. The vertical deflection coil is connected in series between the output and feedback to the input.

8.VIDEO OUTPUT AMPLIFIER TDA6108

The TDA6108Q includes three video output amplifiers is intended to drive the three cathodes of a colour picture tube.

9.POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44608, which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer generates 145V for FBT input, +/-14V for audio amplifier, 5V and 3.3V stand by voltage and 8V, 12V and 5V supplies for other different parts of the chassis.

An optocoupler is used to control the regulation of line voltage and stand-by power consumption. There is a regulation circuit in secondary side. This circuit produces a control voltage according to the changes in 145V DC voltage, via an optocoupler (TCET1102G) to pin3 of the IC.

During the switch on period of the transistor, energy is stored in the transformer. During the switch off period energy is fed to the load via secondary winding. By varying switch-on time of the power transistor, it controls each portion of energy transferred to the second side such that the output voltage remains nearly independent of load variations.

10.MICROCONTROLLER SDA55XX

10.1.General Features

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package PSDIP52-2, PMQFP64-1
- Romless version package PMQFP100-2, PLCC84-2

10.2.External Crystal and Programmable Clock Speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers.
- Normal Mode 33.33 MHz CPU clock, Power Save mode 8.33 MHz

10.3.Microcontroller Features

- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360 ms (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART (rxd, txd)

10.4.Memory

- Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
- Memory banking up to 1Mbyte (Romless version)
- Up to 128 Kilobyte on Chip Program ROM
- Eight 16-bit data pointer registers (DPTR)
- 256-bytes on-chip Processor Internal RAM (IRAM)
- 128bytes extended stack memory.
- Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX
- UP to 16KByte on Chip Extended RAM (XRAM) consisting of;

- 1 Kilobyte on-chip ACQ-buffer-RAM (access via MOVX)
- 1 Kilobyte on-chip extended-RAM (XRAM, access via MOVX) for user software
- 3 Kilobyte Display Memory

10.5.Display Features

- ROM Character Set Supports all East and West European Languages in single device
- Mosaic Graphic Character Set
- Parallel Display Attributes
- Single/Double Width/Height of Characters
- Variable Flash Rate
- Programmable Screen Size (25 Rows x 33...64 Columns)
- Flexible Character Matrixes (HxV) 12 x 9...16
- Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode
- CLUT with up to 4096 colour combinations

• Up to 16 Colours per DRCS Character
• One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
• Shadowing
• Contrast Reduction
• Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
• Support of Progressive Scan and 100 Hz.
• 3 X 4Bits RGB-DACs On-Chip
• Free Programmable Pixel Clock from 10 MHz to 32MHz
• Pixel Clock Independent from CPU Clock
• Multinorm H/V-Display Synchronization in Master or Slave Mode

10.6.Acquisition Features
• Multi-standard Digital Data Slicer
• Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
• Four Different Framing Codes Available
• Data Caption only limited by available Memory
• Programmable VBI-buffer
• Full Channel Data Slicing Supported
• Fully Digital Signal Processing
• Noise Measurement and Controlled Noise Compensation
• Attenuation Measurement and Compensation
• Group Delay Measurement and Compensation
• Exact Decoding of Echo Disturbed Signals

10.7.Ports
• One 8-bit I/O-port with open drain output and optional I^2C Bus emulation support (Port0)
• Two 8-bit multifunction I/O-ports (Port1, Port3)
• One 4-bit port working as digital or analogue inputs for the ADC (Port2)
• One 2-bit I/O port with secondary function (P4.2, 4.3, 4.7)
• One 4-bit I/O-port with secondary function (P4.0, 4.1, 4.4) (Not available in P-SDIP 52)

11.CLASS AB STEREO HEADPHONE DRIVER TDA1308

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package. The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

12.SAW FILTERS

K3953M:
Standard
B/G, D/K, I, L/L'
Features
TV IF filter with Nyquist slopes at 33,90 MHz and 38,90 MHz
Constant group delay
Suitable for CENELEC EN 55020
Terminals
Tinned CuFe alloy
Pin configuration
1 Input
2 Input - ground
3 Chip carrier - ground
4 Output
5 Output

K3958M:
Standard
B/G, D/K, I, L/L'
Features
TV IF filter with Nyquist slopes at 33.90 MHz and 38.90 MHz
Constant group delay
Terminal and Pin configuration are the same with K3953M

K9356M:
Standard
B/G, D/K, I, L
Features
TV IF audio filter with pass band for sound carriers at 32,40 MHz (D/K, L), 32,90 MHz (I) and 33,40 MHz (B/G)
Terminal and Pin configuration are the same with K3953M

K9656M:
Standard
B/G, D/K, I, L/L'
Features
TV IF audio filter with two channels
Channel 1 (L') with one pass band for sound carriers at 40,40 MHz (L') and 39,75 MHz (L'- NICAM)
Channel 2 (B/G, D/K, L, I) with one pass band for sound carriers between 32,35 MHz and 33,40 MHz
Terminal and Pin configuration are the same with K3953M

13.IC DESCRIPTIONS

LM317T
MSP3410G
TEA6415
TDA7269A
24C08
MC44608
TDA9885T
TDA1308T
VDP3130Y
STV9379FA
LM7805/LM7808
SDA55XX
TCET1102G

13.1.LM317T

13.1.1.Description

The LM317T is an adjustable 3 terminal positive voltage regulator capable of supplying in excess of 1.5 amps over an output range of 1.25 to 37 volts. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow–out proof. The LM317 serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM317 can be used as a precision current regulator.

13.1.2.Features

- Output Current in Excess of 1.5 A
- Output Adjustable between 1.2 V and 37 V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting Constant with Temperature
- Output Transistor Safe–Area Compensation
- Floating Operation for High Voltage Applications
- Available in Surface Mount D^2PAK, and Standard 3–Lead Transistor Package
- Eliminates Stocking many Fixed Voltages

13.2.TDA1308T

13.2.1.General Description

The TDA1308 is an integrated class AB stereo headphone driver contained in an SO8 or a DIP8 plastic package. The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications. It gets its input from two analog audio outputs (DACA_L and DACA_R) of MSP 34x0G. The gain of the output is adjustable by the feedback resistor between the inputs and outputs.

13.2.2.Features

- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection

- Low power consumption
- Short-circuit resistant
- High performance
- high signal-to-noise ratio
- High slew rate
- Low distortion
- Large output voltage swing.

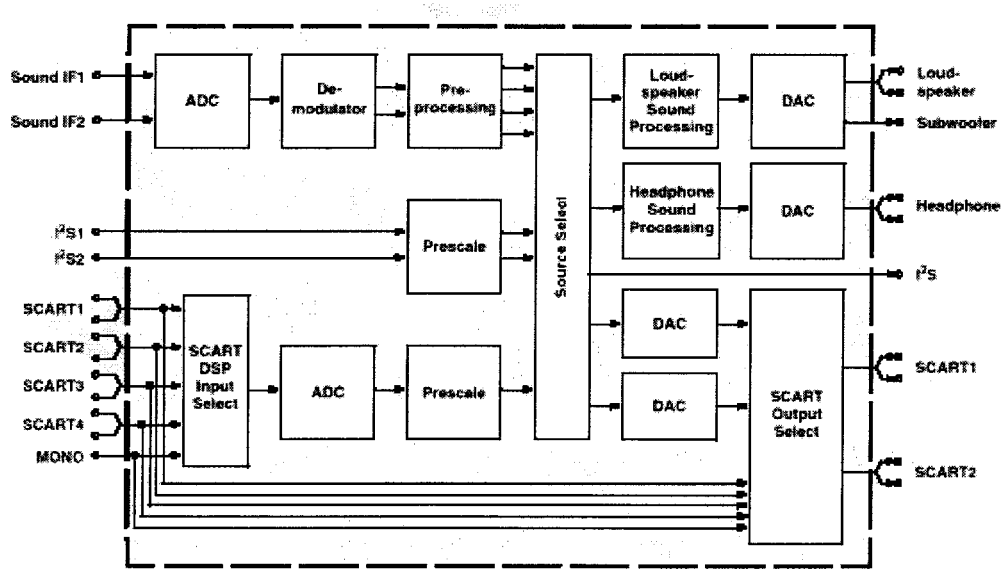
13.2.3.Pinning

SYMBOL	PIN	DESCRIPTION
OUTA	1	Output A
INA(neg)	2	Inverting input A
INA(pos)	3	Non-inverting input A
V_{SS}	4	Negative supply
INB(pos)	5	Non-inverting input B
INB(neg)	6	Inverting input B
OUTB	7	Output B
V_{DD}	8	Positive supply

13.3.MSP34X0G (MSP3410G)

13.3.1.Description

The MSP 34x0G family of single-chip Multi standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure shows a simplified functional block diagram of the MSP 34x0G.



This new generation of TV sound processing ICs now includes versions for processing the multi channel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, MICRONAS Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard. Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J. The MSP 34x0G has optimum stereo performance without any adjustments.
All MSP 34x0G versions are pin and software downward compatible to the MSP34x0D. The MSP34x0G further simplifies controlling software. Standard selection requires a single I^2C transmission only.
The MSP 34x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I^2C interaction is necessary (Automatic Sound Selection).

13.3.2.Features

Standard Selection with single I²C transmission
Automatic Standard Detection of terrestrial TV standards
Automatic Sound Selection (mono/stereo/bilingual), new registers MODUS, STATUS
Two selectable sound IF (SIF) inputs
Automatic Carrier Mute function
Interrupt output programmable (indicating status change)
Loudspeaker / Headphone channel with volume, balance, bass, treble, loudness
AVC: Automatic Volume Correction
Subwoofer output with programmable low-pass and complementary high-pass filter
5-band graphic equalizer for loudspeaker channel
Spatial effect for loudspeaker channel
Four Stereo SCART (line) inputs, one Mono input; two Stereo SCART outputs
Complete SCART in/out switching matrix
Two I²S inputs; one I²S output
Dolby Pro Logic with DPL 351xA coprocessor
All analog FM-Stereo A2 and satellite standards; AM-SECAM L standard
Simultaneous demodulation of (very) high-deviation FM-Mono and NICAM
Adaptive deemphasis for satellite (Wegener-Panda, acc. to ASTRA specification)
ASTRA Digital Radio (ADR) together with DRP 3510A
All NICAM standards
Korean FM-Stereo A2 standard

13.3.3.Pin connections

NC = not connected; leave vacant
LV = if not used, leave vacant
X = obligatory; connect as described in circuit diagram
DVSS: if not used, connect to DVSS
AHVSS: connect to AHVSS

Pin No.					Pin Name	Type	Connection (if not used)	Short Description
PLCC 68-pin	PSDIP 64-pin	PSDIP 52-pin	PQFP 80-pin	PLQFP 64-pin				
1	16	14	9	8	ADR_WS	OUT	LV	ADR word strobe
2	-	-	-	-	NC		LV	Not connected
3	15	13	8	7	ADR_DA	OUT	LV	ADR Data Output
4	14	12	7	6	I2S_DA_IN1	IN	LV	I²S1 data input
5	13	11	6	5	I2S_DA_OUT	OUT	LV	I²S data output
6	12	10	5	4	I2S_WS	IN/OUT	LV	I²S word strobe
7	11	9	4	3	I2S_CL	IN/OUT	LV	I²S clock
8	10	8	3	2	I2C_DA	IN/OUT	X	I²C data
9	9	7	2	1	I2C_CL	IN/OUT	X	I²C data
10	8	-	1	64	NC		LV	Not connected
11	7	6	80	63	STANDBYQ	IN	X	Stand-by (low-active)
12	6	5	79	62	ADR_SEL	IN	X	I²C bus address select
13	5	4	78	61	D_CTR_I/O_0	IN/OUT	LV	D_CTR_I/O_0
14	4	3	77	60	D_CTR_I/O_1	IN/OUT	LV	D_CTR_I/O_1
15	3	-	76	59	NC		LV	Not connected
16	2	-	75	58	NC		LV	Not connected
17	-	-	-	-	NC		LV	Not connected
18	1	2	74	57	AUD_CL_OUT	OUT	LV	Audio clock output (18.432 MHz)
19	64	1	73	56	TP		LV	Test pin
20	63	52	72	55	XTAL_OUT	OUT	X	Crystal oscillator
21	62	51	71	54	XTAL_IN	IN	X	Crystal oscillator
22	61	50	70	53	TESTEN	IN	X	Test pin
23	60	49	69	52	ANA_IN2+	IN	AVSS via 56 pF/LV	IF Input 2 (can be left vacant, only if IF input 1 is also not in use)
24	59	48	68	51	ANA_IN-	IN	AVSS via 56 pF/LV	IF common (can be left vacant, only if IF input 1 is also not in use)
25	58	47	67	50	ANA_IN1+	IN	LV	IF input 2
26	57	46	66	49	AVSUP		X	Analog power supply 5v
-	-	-	65	-	AVSUP		X	Analog power supply 5v

-	-	-	64	-	NC		LV	Not connected
-	-	-	63	-	NC		LV	Not connected
27	56	45	62	48	AVSS		X	Analog ground
-	-	-	61	-	AVSS		X	Analog ground
28	55	44	60	47	MONO_IN	IN	LV	Mono input
-	-	-	59	-	NC		LV	Not connected
29	54	43	58	46	VREFTOP		X	Reference voltage IF A/D converter
30	53	42	57	45	SC1_IN_R	IN	LV	SCART 1 input, right
31	52	41	56	44	SC1_IN_L	IN	LV	SCART 1 input, left
32	51	-	55	43	ASG1		AHVSS	Analog Shield Ground 1
33	50	40	54	42	SC2_IN_R	IN	LV	SCART 2 input, right
34	49	39	53	41	SC2_IN_L	IN	LV	SCART 2 input, left
35	48	-	52	40	ASG2		AHVSS	Analog Shield Ground 2
36	47	38	51	39	SC3_IN_R	IN	LV	SCART 3 input, right
37	46	37	50	38	SC3_IN_L	IN	LV	SCART 3 input, left
38	45	-	49	37	ASG4		AHVSS	Analog Shield Ground 4
39	44	-	48	36	SC4_IN_R	IN	LV	SCART 4 input, right
40	43	-	47	35	SC4_IN_L	IN	LV	SCART 4 input, left
41	-	-	46	-	NC		LV or AHVSS	Not connected
42	42	36	45	34	AGNDC		X	Analog reference voltage
43	41	35	44	33	AHVSS		X	Analog ground
-	-	-	43	-	AHVSS		X	Analog ground
-	-	-	42	-	NC		LV	Not connected
-	-	-	41	-	NC		LV	Not connected
44	40	34	40	32	CAPL_M		X	Volume capacitor MAIN
45	39	33	39	31	AHVSUP		X	Analog power supply 8V
46	38	32	38	30	CAPL_A		X	Volume capacitor AUX
47	37	31	37	29	SC1_OUT_L	OUT	LV	SCART output 1, left
48	36	30	36	28	SC1_OUT_R	OUT	LV	SCART output 1, right
49	35	29	35	27	VREF1		X	Reference ground 1
50	34	28	34	26	SC2_OUT_L	OUT	LV	SCART output 2, left
51	33	27	33	25	SC2_OUT_R	OUT	LV	SCART output 2, right
52	-	-	32	-	NC		LV	Not connected
53	32	-	31	24	NC		LV	Not connected
54	31	26	30	23	DACM_SUB	OUT	LV	Subw oofer output
55	30	-	29	22	NC		LV	Not connected
56	29	25	28	21	DACM_L	OUT	LV	Loudspeaker out, left
57	28	24	27	20	DACM_R	OUT	LV	Loudspeaker out, right
58	27	23	26	19	VREF2		X	Reference ground 2
59	26	22	25	18	DACA_L	OUT	LV	Headphone out, left
60	25	21	24	17	DACA_R	OUT	LV	Headphone out, right
-	-	-	23	-	NC		LV	Not connected
-	-	-	22	-	NC		LV	Not connected
61	24	20	21	16	RESETQ	IN	X	Power-on-reset
62	23	-	20	15	NC		LV	Not connected
63	22	-	19	14	NC		LV	Not connected
64	21	19	18	13	NC		LV	Not connected
65	20	18	17	12	I2S_DA_IN2	IN	LV	I²S2-data input
66	19	17	16	11	DVSS		X	Digital ground
-	-	-	15	-	DVSS		X	Digital ground
-	-	-	14	-	DVSS		X	Digital ground
67	18	16	13	10	DVSUP		X	Digital power supply 5V
-	-	-	12	-	DVSUP		X	Digital power supply 5V
-	-	-	11	-	DVSUP		X	Digital power supply 5V
68	17	15	10	9	ADR_CL	OUT	LV	ADR clock

13.4.VDP313xY

13.4.1.Introduction

The VDP 313xY is a video IC family of high-quality single-chip video processors. Modular design and a sub-micron technology allow the economic integration of features in all classes of TV sets. The VDP 313xY family is based on the VDP 31xxB including YCRCB inputs for DVD component signals.
The VDP 313xY includes complete video, display and deflection processing. All processing is done digitally, the video frontend and video backend are interfacing to the analog world. Most functions of the VDP can be controlled by software via I²C-Bus interface

13.4.2.Features

Video Decoding and Processing

– four CVBS, one S-VHS input, one YC R C B component input
– integrated high-quality A/D converters and associated clamp and AGC circuits
– adaptive 2H comb filter Y/C separator
– multistandard colour decoder PAL/NTSC/SECAM including all substandards
– multistandard sync decoder
– automatic standard recognition
– black-line detector
– linear horizontal scaling (0.25...4), as well as nonlinear horizontal scaling "Panoramavision"
– black-level expander
– dynamic peaking
– soft limiter (gamma correction)
– colour transient improvement

RGB Processing and Deflection

– programmable RGB matrix
– two analog RGB / Fastblank inputs
– half-contrast switch
– picture frame generator
– scan velocity modulation output
– high-performance H/V deflection
– separate ADC for tube measurements
– EHT compensation
– angle and bow correction
– one 20.25 MHz crystal, few external components
–I²C-Bus Interface
– 64-pin PSDIP package

13.4.3.Pin Connections and short descriptions

NC = not connected
X = obligatory; connect as described in circuit diagram
OUT = Output
LV = if not used, leave vacant
IN = Input
SUPPLY = Supply Pin

Pin no PSDIP 64-pin	Pin name	Type	Connection (if not used)	Short description
1	TEST	IN	GNDD	Test Input
2	RESQ	IN	X	Reset Input
3	SCL	IN/OUT	X	I²C Bus Clock
4	SDA	IN/OUT	X	I²C Bus Data
5	GNDD	SUPPLY	X	Digital Ground
6	HCS	IN	LV	Half Contrast Switch Input
7	FSY	OUT	LV	Front Sync Output
8	CSY	OUT	LV	Composite Sync Output
9	VS	OUT	LV	Vertical Sync Output (=VS Bit of MSY for TPU)
10	INTLC	OUT	LV	Intefrace Control Output
11	VPROT	IN	GNDAB	Vertical Protection Input
12	SAFETY	IN	GNDAB	Safety Input
13	HFLB	IN	HOUT	Horizontal Flyback Input
14	GNDD	SUPPLY	X	Digital Ground
15	VSUPD	SUPPLY	X	Digital Supply Voltage (3.3V)
16	GNDD	SUPPLY	X	Digital Ground
17	VSUPD	SUPPLY	LV	Digital Supply Voltage (3.3V)
18	P0	IN/OUT	LV	Port 1, Bit 0
19	P1	IN/OUT	LV	Port 1, Bit 1
20	P2	IN/OUT	GNDD	Port 1, Bit 2
21	P3	IN/OUT	GNDD	Port 1, Bit 3
22	P4	IN/OUT	GNDD	Port 1, Bit 4
23	P5	IN/OUT	GNDD	Port 1, Bit 5
24	P6	IN/OUT	GNDD	Port 1, Bit 6

25	GNDD	SUPPLY	X	Digital Ground
26	RSW2	OUT	GNDAB	Range Switch 2 for Measurement ADC
27	RSW1	OUT	GNDAB	Range Switch 1 for Measurement ADC
28	SENSE	IN	GNDAB	Sense ADC Input
29	GNDM	SUPPLY	X	Ground, MADC input
30	VERTQ	OUT	LV	Inverted Vertical Sawtooth Output
31	VERT	OUT	LV	Vertical Sawtooth Output
32	E/w	OUT	LV	Vertical Parabola Output
33	XREF	IN	X	Reference Input for RGB DACs
34	SVMOUT	OUT	VSUPAB	Analog Scan Velocity Modulation Output
35	GNDAB	SUPPLY	X	Analog Ground Backend
36	VSUPAB	SUPPLY	X	Analog Supply Voltage (5.0V) Backend
37	ROUT	OUT	VSUPAB	Analog Red Output
38	GOUT	OUT	VSUPAB	Analog Green Output
39	BOUT	OUT	VSUPAB	Analog Blue Output
40	VRD	IN	X	DAC Reference
41	RIN	IN	GNDAB	Analog Red Input
42	GIN	IN	GNDAB	Analog Green Input
43	BIN	IN	GNDAB	Analog Blue Input
44	FBLIN	IN	GNDAB	Fast Blank Input
45	RIN2	IN	GNDAB	Analog Red Input2
46	GIN2	IN	GNDAB	Analog Green Input2
47	BIN2	IN	GNDAB	Analog Blue Input2
48	FBLIN2	IN	GNDAB	Fast Blank Input2
49	CLK20	OUT	LV	20.25 MHz System Clock Output
50	HOUT	OUT	X	Horizontal Drive Output
51	XTAL 1	IN	X	Analog Crystal Input
52	XTAL 2	OUT	X	Analog Crystal Output
53	CIN 2/CRIN		LV	Analog Chroma 2/Component C_R Input
54	CBIN	IN	LV	Component C_B Input
55	GNDAF	SUPPLY	X	Analog Ground Frontend
56	SGND	IN	GNDAF	Signal Ground for Analog Input
57	VRT	IN	X	Reference Voltage Top, Video ADC
58	VSUPAF	SUPPLY	X	Analog Supply Voltage (5.0V) Frontend
59	VOUT	OUT	LV	Analog Video Output
60	CIN1	IN	VRT	Analog Chroma 1 Input
61	VIN1	IN	VRT	Analog Video 1 Input
62	VIN2	IN	VRT	Analog Video 2 Input
63	VIN3	IN	VRT	Analog Video 3 Input
64	VIN4	IN	VRT	Analog Video 4 Input

13.5.TEA6415C

13.5.1.General Description

The main function of the IC is to switch 8 video input sources on 6 outputs. Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of synch. top for CVBS or black level for RGB signals). Each nominal gain between any input and output is 6.5dB. For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5 V_{DC} on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS. Driving 75? load needs an external transistor. It is possible to have the same input connected to several outputs. The starting configuration upon power on (power supply: 0 to 10V) is undetermined. In this case, 6 words of 16 bits are necessary to determine one configuration. In other case, 1 word of 16 bits is necessary to determine one configuration.

13.5.2.Features

- 20MHz Bandwidth
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 Inputs (CVBS, RGB, MAC, CHROMA,...)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled

• 6.5dB gain between any input and output
• 55dB crosstalk at 5mHz
• Fully ESD protected

13.5.3.Pinning

1. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
2. Data : Low level : -0.3V Max: 1.5V,
   High level : 3.0V Max : Vcc+0.5V
3. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
4. Clock : Low level : -0.3V Max: 1.5V,
   High level : 3.0V Max : Vcc+0.5V
5. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
6. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
7. Prog
8. Input : Max : 2Vpp, Input Current: 1mA, Max: 3mA
9. Vcc : 12V
10. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
11. Input : Max : 2Vpp, Input Current: 1mA, Max : 3mA
12. Ground
13. Output : 5.5Vpp, Min : 4.5Vpp
14. Output : 5.5Vpp, Min : 4.5Vpp
15. Output : 5.5Vpp, Min : 4.5Vpp
16. Output : 5.5Vpp, Min : 4.5Vpp
17. Output : 5.5Vpp, Min : 4.5Vpp
18. Output : 5.5Vpp, Min : 4.5Vpp
19. Ground
20. Input : Max : 2Vpp, Input Current : 1mA, Max : 3mA

13.6.STV9379FA

13.6.1.Description

Designed for monitors and high performance TVs, the STV9379FA vertical deflection booster can handle flyback voltage up to 90V. Further to this, it is possible to have a flyback voltage, which is more than the double of the supply (Pin 2). This allows to decrease the power consumption, or to decrease the flyback time for a given supply voltage. The STV9379FA operates with supplies up to 42V and provides up to 2.6APP output current to drive the yoke. The STV9379FA is offered in HEPTAWATT package.

13.6.2.Features

Power Amplifier
Thermal Protection
Output Current Up To 2.6APP
Flyback Voltage Up To 90V (on Pin 5)
Suitable For DC Coupling Application
External Flyback Supply

13.6.3.Pinning

Pin1 : Output Stage Supply
Pin2 : Output
Pin3 : GND or Negative Supply
Pin4 : Flyback Supply
Pin5 : Supply Voltage
Pin6 : Inverting Input
Pin7 : Non-inverting Input

13.7.TDA7269A

13.7.1.Description

The TDA7269A is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

13.7.2.Features

Wide Supply Voltage Range Up To ±20V
Split Supply
High Output Power
14 + 14W @THD =10%, R_L =8O,V_S= +16V
No Pop at Turn-On/Off
Mute (Pop Free)
Stand-By Feature (Low I_q)
Short Circuit Protection To Gnd
Thermal Overload Protection

13.8.LM7800 (LM7805/LM7808)

13.8.1.Description

The L7800 series of three-terminal positive regulators is available in TO-220 TO-220FP TO-3 and D 2 PAK packages and several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shutdown and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

13.8.2.Features

Output Current Up To 1.5 A
Output Voltages of 5; 5.2; 6; 8; 8.5; 9; 12; 15; 18; 24V
Thermal Over load protection
Short Circuit Protection
Output Transition SOA Protection

13.9.AT24C08

13.9.1.Description

The AT24C01A/02/04/08/16 provides 1024/2048/4096/8192/16384 bits of serial electrically erasable and programmable read-only memory (EEPROM) organized as 128/256/512/1024/2048 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low-power and low-voltage operation are essential. The AT24C01A/02/04/08/16 is available in space-saving 8-pin PDIP, (AT24C01A/02/04/08/16), 8lead TSSOP (AT24C01A/02/04/08/16) and 8lead JEDEC SOIC (AT24C01A/02/04/08/16) packages and is accessed via a 2-wire serial interface. In addition, the entire family is available in 5.0V (4.5V to 5.5V), 2.7V (2.7V to 5.5V), 2.5V (2.5V to 5.5V) and 1.8V (1.8V to 5.5V) versions.

13.9.2.Features

• Low-voltage and Standard-voltage Operation
– 5.0 (V CC = 4.5V to 5.5V)
– 2.7 (V CC = 2.7V to 5.5V)
– 2.5 (V CC = 2.5V to 5.5V)
– 1.8 (V CC = 1.8V to 5.5V)
• Internally Organized 128 x 8 (1K), 256 x 8 (2K), 512 x 8 (4K), 1024 x 8 (8K) or 2048 x 8 (16K)
• 2-wire Serial Interface
• Schmitt Trigger, Filtered Inputs for Noise Suppression
• Bi-directional Data Transfer Protocol
• 100 kHz (1.8V, 2.5V, 2.7V) and 400 kHz (5V) Compatibility
• Write Protect Pin for Hardware Data Protection

• 8-byte Page (1K, 2K), 16-byte Page (4K, 8K, 16K) Write Modes
• Partial Page Writes are Allowed
• Self-timed Write Cycle (10 ms max)
• High-reliability
– Endurance: 1 Million Write Cycles
– Data Retention: 100 Years
• Automotive Grade and Extended Temperature Devices Available
• 8-lead JEDEC SOIC, 8-pin PDIP and 8-lead TSSOP Packages

13.9.3.Pin Configurations

Pin name	Function
A0-A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

13.10.SDA5555

13.10.1.General definition

The SDA55XX is a single chip teletext decoder for decoding World System Teletext data as well as Video Programming System (VPS), Program Delivery Control (PDC), and Wide Screen Signalling (WSS) data used for PAL plus transmissions (Line 23). The device also supports Closed caption acquisition and decoding. The device provides an integrated general-purpose, fully 8051-compatible Microcontroller with television specific hardware features. Microcontroller has been enhanced to provide powerful features such as memory banking, data pointers, and additional interrupts etc. The on-chip display unit for displaying Level 1.5 teletext data can also be used for customer defined on screen displays. Internal XRAM consists of up to 16 Kbytes. Device has an internal ROM of up to 128 KBytes. ROMless versions can access up to 1 MByte of external RAM and ROM. The SDA 55XX supports a wide range of standards including PAL, NTSC and contains a digital slicer for VPS, WSS, PDC, TTX and Closed Caption, an accelerating acquisition hardware module, a display generator for Level 1.5 TTX data and powerful On screen Display capabilities based on parallel attributes, and Pixel oriented characters (DRCS).

13.10.2.Features

General

• Feature selection via special function register
• Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
• Supply Voltage 2.5 and 3.3 V
• ROM version package PSDIP52-2, PMQFP64-1
• Romless version package PMQFP100-2, PLCC84-2

External Crystal and Programmable Clock Speed

• Single external 6MHz crystal, all necessary clocks are generated internally
• CPU clock speed selectable via special function registers.
• Normal Mode 33.33 MHz CPU clock, Power Save mode 8.33 MHz

Microcontroller Features

• 8bit 8051 instruction set compatible CPU.
• 33.33-MHz internal clock (max.)
• 0.360ms (min.) instruction cycle
• Two 16-bit timers
• Watchdog timer
• Capture compare timer for infrared remote control decoding
• Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
• ADC (4 channels, 8 bit)
• UART

Memory
• Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
• Memory banking up to 1Mbyte (Romless version)
• Up to 128 Kilobyte on Chip Program ROM
• Eight 16-bit data pointer registers (DPTR)
• 256-bytes on-chip Processor Internal RAM (IRAM)
• 128bytes extended stack memory.
• Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX
• UP to 16KByte on Chip Extended RAM (XRAM) consisting of;
- 1 Kilobyte on-chip ACQ-buffer-RAM (access via MOVX)
- 1 Kilobyte on-chip extended-RAM (XRAM, access via MOVX) for user software
- 3 Kilobyte Display Memory

Display Features
• ROM Character Set Supports all East and West European Languages in single device
• Mosaic Graphic Character Set
• Parallel Display Attributes
• Single/Double Width/Height of Characters
• Variable Flash Rate
• Programmable Screen Size (25 Rows x 33...64 Columns)
• Flexible Character Matrixes (HxV) 12 x 9...16
• Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode
• CLUT with up to 4096 colour combinations
• Up to 16 Colours per DRCS Character
• One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
• Shadowing
• Contrast Reduction
• Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
• Support of Progressive Scan and 100 Hz.
• 3 X 4Bits RGB-DACs On-Chip
• Free Programmable Pixel Clock from 10 MHz to 32MHz
• Pixel Clock Independent from CPU Clock
• Multinorm H/V-Display Synchronization in Master or Slave Mode

Acquisition Features
• Multistandard Digital Data Slicer
• Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
• Four Different Framing Codes Available
• Data Caption only Limited by available Memory
• Programmable VBI-buffer
• Full Channel Data Slicing Supported
• Fully Digital Signal Processing
• Noise Measurement and Controlled Noise Compensation
• Attenuation Measurement and Compensation
• Group Delay Measurement and Compensation
• Exact Decoding of Echo Disturbed Signals

Ports
• One 8-bit I/O-port with open drain output and optional I^2C Bus emulation support (Port 0)
• Two 8-bit multifunction I/O-ports (Port 1, Port 3)
• One 4-bit port working as digital or analog inputs for the ADC (Port 2)
• One 2-bit I/O port with secondary functions (P4.2, 4.3, 4.7)
• One 4-bit I/O-port with secondary function (P4.0, 4.1, 4.4) (Not available in P-SDIP 52)

13.11.MC44608

13.11.1.Description

The MC44608 is a high performance voltage mode controller designed for off–line converters. This high voltage circuit that integrates the start–up current source and the oscillator capacitor, requires few

external components while offering a high flexibility and reliability. The device also features a very high efficiency stand–by management consisting of an effective Pulsed Mode operation. This technique enables the reduction of the stand–by power consumption to approximately 1W while delivering 300mW in a 150W SMPS.

- Integrated Start–Up Current Source
- Lossless Off–Line Start–Up
- Direct Off–Line Operation
- Fast Start–Up

13.11.2.General Features

- Flexibility
- Duty Cycle Control
- Under voltage Lockout with Hysteresis
- On Chip Oscillator Switching Frequency 40, or 75kHz
- Secondary Control with Few External Components

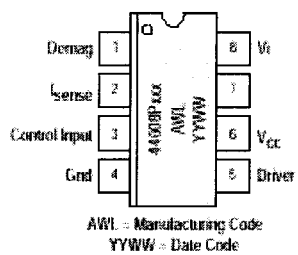
Protections

- Maximum Duty Cycle Limitation
- Cycle by Cycle Current Limitation
- Demagnetization (Zero Current Detection) Protection
- "Over VCC Protection" Against Open Loop
- Programmable Low Inertia Over Voltage Protection Against Open Loop
- Internal Thermal Protection

GreenLine™ Controller

- Pulsed Mode Techniques for a Very High Efficiency Low Power Mode
- Lossless Startup
- Low dV/dT for Low EMI Radiations

13.11.3.Pin Connections



13.11.4.Pin Function description

Pin	Name	Description
1	Demag	The Demag pin offers 3 different functions: Zero voltage crossing detection (50mV), 24mA current detection and 120mA current detection. The 24mA level is used to detect the secondary reconfiguration status and the 120mA level to detect an Over Voltage status called Quick OVP.
2	ISENSE	The Current Sense pin senses the voltage developed on the series resistor inserted in the source of the power MOSFET. When I sense reaches 1V, the Driver output (pin 5) is disabled. This is known as the Over Current Protection function. A 200mA current source is flowing out of the pin 3 during the start–up phase and during the switching phase in case of the Pulsed Mode of operation. A resistor can be inserted between the sense resistor and the pin 3; thus a programmable peak current detection can be performed during the SMPS stand–by mode.
3	Control Input	A feedback current from the secondary side of the SMPS via the opto–coupler is injected into this pin. A resistor can be connected between this pin and GND to allow the programming of the Burst duty cycle during the Stand–by mode.
4	Ground	This pin is the ground of the primary side of the SMPS.
5	Driver	The current and slew rate capability of this pin are suited to drive Power MOSFETs.
6	VCC	This pin is the positive supply of the IC. The driver output gets disabled when the voltage becomes higher than 15V and the operating range is between 6.6V and 13V. An intermediate voltage level of 10V creates a disabling condition called Latched Off phase.
7		This pin is to provide isolation between the Vi pin 8 and the VCC pin 6.
8	Vi	This pin can be directly connected to a 500V voltage source for start–up function of the IC. During the Start–up phase a 9 mA current source is internally delivered to the VCC pin 6 allowing a rapid charge of the VCC capacitor. As soon as the IC starts –up, this current source is disabled.

13.12.TCET1102G

13.12.1.Description

The TCET110/ TCET2100/ TCET4100 consists of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in a 4-lead up to 16-lead plastic dual inline package. The elements are mounted on one lead frame using a **coplanar technique**, providing a fixed distance between input and output for highest safety requirements.

13.12.2.Applications

Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation):
For appl. class I – IV at mains voltage =300 V
For appl. class I – III at mains voltage =600 V
According to VDE 0884, table 2, suitable for: **Switch-mode power supplies, line receiver, computer peripheral interface, microprocessor system interface.**

13.12.3.Features

VDE 0884 related features:
Rated impulse voltage (transient overvoltage) V_{IOTM} = 8 kV peak
Isolation test voltage (partial discharge test voltage) V_{pd} = 1.6 kV
Rated isolation voltage (RMS includes DC) V_{IOWM} = 600 V RMS (848 V peak)
Rated recurring peak voltage (repetitive) V_{IORM} = 600 V RMS

General features:
CTR offered in 9 groups
Isolation materials according to UL94-VO
Pollution degree 2 (DIN/VDE 0110 / resp. IEC 664)
Climatic classification 55/100/21 (IEC 68 part 1)
Special construction: Therefore, extra low coupling capacity of typical 0.2pF, high **C**ommon **M**ode **R**ejection
Low temperature coefficient of CTR
G = Leadform 10.16 mm; provides creepage distance > 8 mm, for TCET2100/ TCET4100 optional; suffix letter 'G' is not marked on the optocoupler
Coupling System U

13.13.TDA9885T

13.13.1.General Description

The TDA9885 is an alignment-free single standard (without positive modulation) vision and sound IF signal PLL.

13.13.2.Features

- 5 V supply voltage
- Gain controlled wide-band Vision Intermediate Frequency (VIF) amplifier (AC-coupled)
- Multistandard true synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Gated phase detector for L/L accent standard
- Fully integrated VIF Voltage Controlled Oscillator (VCO), alignment-free; frequencies switchable for all negative and positive modulated standards via I²C-bus
- Digital acquisition help, VIF frequencies of 33.4, 33.9, 38.0, 38.9, 45.75 and 58.75 MHz
- 4 MHz reference frequency input [signal from Phase-Locked Loop (PLL) tuning system] or operating as crystal oscillator
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals
- Precise fully digital Automatic Frequency Control (AFC) detector with 4-bit digital-to-analog converter; AFC bits via I²C -bus readable
- TakeOver Point (TOP) adjustable via I²C-bus or alternatively with potentiometer
- Fully integrated sound carrier trap for 4.5, 5.5, 6.0 and 6.5 MHz, controlled by FM-PLL oscillator
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode (PLL controlled)

• SIF AGC for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I²C-bus
• AM demodulator without extra reference circuit
• Alignment-free selective FM-PLL demodulator with high linearity and low noise
• I²C-bus control for all functions
• I²C-bus transceiver with pin programmable Module Address (MAD).

13.13.3.Pinning

SYMBOL	PIN	DESCRIPTION
VIF1	1	VIF differential input 1
VIF2	2	VIF differential input 2
OP1	3	output 1 (open-collector)
FMPLL	4	FM-PLL for loop filter
DEEM	5	de-emphasis output for capacitor
AFD	6	AF decoupling input for capacitor
DGND	7	digital ground
AUD	8	audio output
TOP	9	tuner AGC TakeOver Point (TOP)
SDA	10	I²C-bus data input/output
SCL	11	I²C-bus clock input
SIOMA	12	sound intercarrier output and MAD select
n.c.	13	not connected
TAGC	14	tuner AGC output
REF	15	4 MHz crystal or reference input
VAGC	16	VIF-AGC for capacitor; note 1
CVBS	17	video output
AGND	18	analog ground
VPLL	19	VIF-PLL for loop filter
V_P	20	supply voltage (+5 V)
AFC	21	AFC output
OP2	22	output 2 (open-collector)
SIF1	23	SIF differential input 1
SIF2	24	SIF differential input 2

13.14.PI5V330

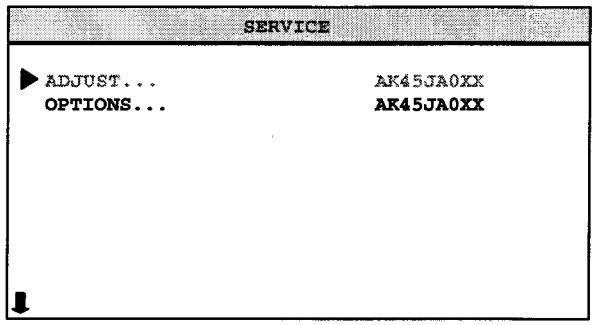
13.14.1.General Description

The PI5V330 is well suited for video applications when switching composite or RGB analog. A picture-in-picture application will be described in this brief. The pixel-rate creates video overlays so two or more pictures can be viewed at the same time. An inexpensive NTSC titler can be implemented by superimposing the output of a character generator on a standard composite video background.

14.AK45 CHASSIS PRODUCTION SERVICE MODE ADJUSTMENTS

14.1.SERVICE MENU

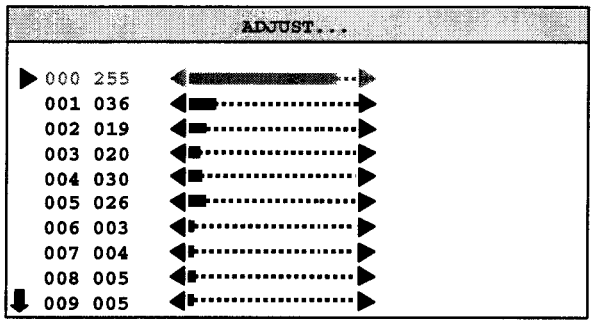
All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual adjustments are done correctly. To start production mode alignments enter the MAIN MENU and then press the digits 4, 7, 2 and 5 respectively or press **MUTE** and **INFO** buttons at the same time. The following first menu appears on the screen.



You can select Adjust or Options items by pressing Up/Down buttons. Selected parameter will be highlighted. Inorder to enter the selected parameter, press Left or Right button. To exit the service menu press MENU button. Entire service menu parameters of AK45 CHASSIS are listed below.

14.2.ADJUST MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. In ADJUST menu, changed values are stored automatically.



White Point Red, White Point Green, White Point Blue:
Not used.

AGC
Apply PAL BG signal, VHF-3 Channel-12 and 60dBµV signal level. Adjust AGC (Automatic Gain Control) item by pressing Left/Right buttons till the voltage at AGC point (pin1 of the tuner) becomes 3.0 volts.

If PLL negative
Not used.

If PLL pozitive
Not used.

Y-Delay
Enter a PAL B/G colour and black-white bar test pattern via RF. Adjust Y-Delay for PAL till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Y-Delay SECAM
Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Y-Delay NTSC
Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

Y-Delay other
Not used.

Vertical Pozition Offset
This value is fixed (127)

Vertical Pozition Offset
This value is fixed (127)

Horizontal Pozition Offset
This value is fixed (127)

Horizontal Pozition Offset
This value is fixed (127)

Vertical Blank Start
This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank start position.

Vertical Blank Stop
This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank stop position.

Angle
Change Angle by pressing Left/Right buttons till the vertical lines of the crosshatch pattern become completely perpendicular to horizontal lines without any angle of vertical deviation. Check and readjust ANGLE item if the adjustment becomes improper after some other geometric adjustments are done.

Bow
Change Bow by pressing Left/Right buttons till the vertical lines especially ones close to the left and right sides will of equal and symmetrical bending, i.e. they together will neither be towards left side nor right side. Check and readjust BOW item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 Horizontal Blank Start
This register will be used only at 16:9 tube for 4:3 mode adjustment. It adjusts the horizontal blank start position.

4:3 Horizontal Blank Stop
This register will be used only at 16:9 tube for 4:3 mode adjustment. It adjusts the horizontal blank stop position.

EHTV Compensation
It's used to adjust the EHT compensation vertical gain coefficient.

EHTTM Compensation
It's used to adjust the EHT compensation time constant.

EHTEW Compensation
It's used to adjust the EHT compensation east/west gain coefficient.

WDR
The amplitude of R of RGB output can be adjusted with the drive parameter WDR.

WDG
The amplitude of G of RGB output can be adjusted with the drive parameter WDG.

WDB
The amplitude of B of RGB output can be adjusted with the drive parameter WDB.

CR
The DC offset values of R of RGB output can be adjusted with the cutoff parameter CR.

CG
The DC offset values of G of RGB output can be adjusted with the cutoff parameter CG.

CB
The DC offset values of B of RGB output can be adjusted with the cutoff parameter CB.

COR coring level
The amplitude of the correction signal is adjustable. Small noise amplitudes in the correction signal are suppressed by an adjustable coring circuit.

REGULAR VERT_POS (Regular mode Vertical Position)
Enter a PAL B/G circle test pattern via RF. Change Vertical Position till the test pattern is vertically centered. Horizontal line at the center pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Position item if the adjustment becomes improper after some other geometric adjustments are done.
It's used to adjust the vertical position of regular mode.

REGULAR VERT_AMPL (Regular mode Vertical Amplitude)
It's used to adjust the vertical amplitude of regular mode.

REGULAR VERT_SCOR (Regular mode Vertical S-Correction)
It's used to adjust the vertical s-correction of regular mode.

REGULAR VERT_SSYM(Regular mode Vertical S Symmetry)
It's used to adjust the vertical s-symetry of regular mode.

REGULAR TRAPEZE (Regular mode Trapeze)
Change Trapezium by pressing Left/Right buttons till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.
It's used to adjust the trapeze of regular mode.

REGULAR CUSHION (Regular mode Cushion)
It's used to adjust the cushion of regular mode.

REGULAR HOR_COR_SYM (Regular mode Horizontal Corner Symmetry)
It's used to adjust the horizontal corners symmetry of regular mode.

REGULAR HOR_CORNER (Regular mode Horizontal Corner)
It's used to adjust the horizontal corners of regular mode.

REGULAR HORZ_POS (Regular mode Horizontal Position)
Enter a PAL B/G circle test pattern via RF. Change Horizontal Position until the picture is horizontally centered. Check and readjust Horizontal Position item if the adjustment becomes improper after some other geometric adjustments are done.
It's used to adjust the horizontal position of regular mode.

REGULAR HORZ_AMPL (Regular mode Horizontal Amplitude)
It's used to adjust the horizontal amplitude of regular mode.

PANORAMIC VERT_POS (Panoramic mode Vertical Position)
It's used to adjust the vertical position of panoramic mode.

PANORAMIC VERT_AMPL (Panoramic mode Vertical Amplitude)
It's used to adjust the vertical amplitude of panoramic mode.

PANORAMIC VERT_SCOR (Panoramic mode Vertical S-Correction)
It's used to adjust the vertical s-correction of panoramic mode.

PANORAMIC VERT_SSYM (Panoramic mode Vertical S-Symmetry)
It's used to adjust the vertical s-symmetry of panoramic mode.

PANORAMIC TRAPEZE (Panoramic mode Trapeze)
It's used to adjust the trapeze of panoramic mode.

PANORAMIC CUSHION (Panoramic mode Cushion)
It's used to adjust the cushion of panoramic mode.

PANORAMIC HOR_COR_SYM (Panoramic mode Horizontal corner symmetry)
It's used to adjust the horizontal corners symmetry of panoramic mode.

PANORAMIC HOR_CORNER (Panoramic mode Horizontal corner)
It's used to adjust the horizontal corners of panoramic mode.

PANORAMIC HORZ_POS (Panoramic mode Horizontal position)
It's used to adjust the horizontal position of panoramic mode.

PANORAMIC HORZ_AMPL (Panoramic mode Horizontal amplitude)
It's used to adjust the horizontal amplitude of panoramic mode.

14:9 ZOOM VERT_POS (14:9 Zoom mode Vertical Position)
It's used to adjust the vertical position of 14:9 zoom mode.

14:9 ZOOM VERT_AMPL (14:9 Zoom mode Vertical Amplitude)
It's used to adjust the vertical amplitude of 14:9 zoom mode.

14:9 ZOOM VERT_SCOR (14:9 Zoom mode Vertical S-Correction)
It's used to adjust the vertical s-correction of 14:9 zoom mode.

14:9 ZOOM VERT_SSYM (14:9 Zoom mode Vertical Symmetry)
It's used to adjust the vertical s-symmetry of 14:9 zoom mode.

14:9 ZOOM TRAPEZE (14:9 Zoom mode Trapeze)
It's used to adjust the trapeze of 14:9 zoom mode.

14:9 ZOOM CUSHION (14:9 Zoom mode Cushion)
It's used to adjust the cushion of 14:9 zoom mode.

14:9 ZOOM HOR_COR_SYM (14:9 Zoom mode Corner Symmetry)
It's used to adjust the horizontal corners symmetry of 14:9 zoom mode.

14:9 ZOOM HOR_CORNER (14:9 Zoom mode Horizontal Corner)
It's used to adjust the horizontal corners of 14:9 zoom mode.

14:9 ZOOM HORZ_POS (14:9 Zoom mode Horizontal Position)
It's used to adjust the horizontal position of 14:9 zoom mode.

14:9 ZOOM HORZ_AMPL (14:9 Zoom mode Horizontal Amplitude)
It's used to adjust the horizontal amplitude of 14:9 zoom mode.

16:9 ZOOM VERT_POS (16:9 Zoom mode Vertical Position)
It's used to adjust the vertical position of 16:9 zoom mode.

16:9 ZOOM VERT_AMPL (16:9 Zoom mode Vertical Amplitude)
It's used to adjust the vertical amplitude of 16:9 zoom mode.

16:9 ZOOM VERT_SCOR (16:9 Zoom mode Vertical S-Correction)
It's used to adjust the vertical s-correction of 16:9 zoom mode.

16:9 ZOOM VERT_SSYM (16:9 Zoom mode Vertical S-Symmetry)
It's used to adjust the vertical s-symmetry of 16:9 zoom mode.

16:9 ZOOM TRAPEZE (16:9 Zoom mode Trapeze)
It's used to adjust the trapeze of 16:9 zoom mode.

16:9 ZOOM CUSHION (16:9 Zoom mode Cushion)
It's used to adjust the cushion of 16:9 zoom mode.

16:9 ZOOM HOR_COR_SYM (16:9 Zoom mode Horizontal corner symmetry)
It's used to adjust the horizontal corners symmetry of 16:9 zoom mode.

16:9 ZOOM HOR_CORNER (16:9 Zoom mode Horizontal corner)
It's used to adjust the horizontal corners of 16:9 zoom mode.

16:9 ZOOM HORZ_POS (16:9 Zoom mode Horizontal position)
It's used to adjust the horizontal position of 16:9 zoom mode.

16:9 ZOOM HORZ_AMPL (16:9 Zoom mode Horizontal amplitude)
It's used to adjust the horizontal amplitude of 16:9 zoom mode.

16:9 ZOOM SUBTITLE VERT_POS (16:9 Zoom Subtitle mode Vertical position)
It's used to adjust the vertical position of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_AMPL (16:9 Zoom Subtitle mode Vertical amplitude)
It's used to adjust the vertical amplitude of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_SCOR (16:9 Zoom Subtitle mode Vertical S-Correction)
It's used to adjust the vertical s-correction of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_SSYM (16:9 Zoom Subtitle mode Vertical Symmetry)
It's used to adjust the vertical s-symmetry of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE TRAPEZE (16:9 Zoom Subtitle mode Trapeze)
It's used to adjust the trapeze of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE CUSHION (16:9 Zoom Subtitle mode Cushion)
It's used to adjust the cushion of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE HOR_COR_SYM (16:9 Zoom Subtitle mode Horizontal Corner Symmetry)
It's used to adjust the horizontal corners symmetry of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE HOR_CORNER (16:9 Zoom Subtitle mode Horizontal corner)
It's used to adjust the horizontal corners of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE HORZ_POS (16:9 Zoom Subtitle mode Horizontal position)
It's used to adjust the horizontal position of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE HORZ_AMPL (16:9 Zoom Subtitle mode Horizontal amplitude)
It's used to adjust the horizontal amplitude of 16:9 zoom subtitle mode.

OSD Position
It's used to adjust the horizontal position of the OSD.

BCLTHR
Beam current threshold

BCLG
Beam current loop gain

ROTATION (TILT)
This adjustment only works when the TV has rotation option. Change TILT by pressing Left/Right buttons to rotate the complete raster clock-wise and counter clock-wise depending on the CRT. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.

LSLSA, LSLSB, LSL2, LSLTA, LSLTB (Luma soft limiter)
LSLSA: Luma soft limiter slope A (fixed)
LSLSB: Luma soft limiter slope B (fixed)
LSL2: Luma soft limiter absolute limit (fixed)
LSLTA: Luma soft limiter segment A tilt point (fixed)
LSLTB: Luma soft limiter segment A tilt point (fixed)

REFERENCE WDR RED (NORMAL)
The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE WDR GREEN (NORMAL)
The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE WDR BLUE (NORMAL)
The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE CUTOFF RED
It's fixed.

REFERENCE CUTOFF GREEN
It's fixed.

REFERENCE CUTOFF BLUE
It's fixed.

IBRM
Internal Brightness, the brightness for measurement can be set to measure at higher cutoff current. The measurement brightness is independent of the drive values. It's used to adjust the maximum brightness level.

WDRV
White drive measurement control. It is used to adjust the maximum contrast level.

ACC_SAT (COLOUR OFFSET)
It's used to adjust the max. colour level.

G2 CUTOFF REFERENCE
It's fixed.

G2 WDR REFERENCE
It's fixed.

POFS2 (RGB HORIZONTAL SHIFT)
It's used to adjust the horizontal position of RGB signal.

REFERENCE WDR RED COOL
The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR GREEN COOL
The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR BLUE COOL
The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR RED WARM
The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of warm mode.

REFERENCE WDR GREEN WARM
The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR BLUE WARM
The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

STANDARD MODE BRIGHTNESS
It's used to adjust the brightness value of standard mode.

STANDARD MODE COLOUR
It's used to adjust the colour value of standard mode.

STANDARD MODE CONTRAST
It's used to adjust the contrast value of standard mode.

FULL VERT_POS (16:9 MODE)
It's used to adjust the vertical position of 16:9 mode (full mode).

FULL VERT_AMPL
It's used to adjust the vertical amplitude of 16:9 mode (full mode).

FULL VERT_SCOR
It's used to adjust the vertical s-correction of 16:9 mode (full mode).

FULL VERT_SSYM
It's used to adjust the vertical s-symmetry of 16:9 mode (full mode).

FULL TRAPEZE
It's used to adjust the trapeze of 16:9 mode (full mode).

FULL CUSHION
It's used to adjust the cushion of 16:9 mode (full mode).

FULL HOR_COR_SYM
It's used to adjust the horizontal corners symmetry of 16:9 mode (full mode).

FULL HOR_CORNER
It's used to adjust the horizontal corners of 16:9 mode (full mode).

FULL HORZ_POS
It's used to adjust the horizontal position of 16:9 mode (full mode).

FULL HORZ_AMPL
It's used to adjust the horizontal amplitude of 16:9 mode (full mode).

BRIGHT MODE BRIGHTNESS
It's used to adjust the brightness value of bright mode.

BRIGHT MODE COLOUR
It's used to adjust the colour value of bright mode.

BRIGHT MODE CONTRAST
It's used to adjust the contrast value of bright mode.

SOFT MODE BRIGHTNESS
It's used to adjust the brightness value of soft mode.

SOFT MODE COLOUR
It's used to adjust the colour value of soft mode.

SOFT MODE CONTRAST
It's used to adjust the contrast value of soft mode.

PERSONAL MODE FACTORY SETTING BRIGHTNESS
It's fixed.

PERSONAL MODE FACTORY SETTING COLOUR
It's fixed.

PERSONAL MODE FACTORY SETTING CONTRAST
It's fixed.

SCINC FOR PANAROMIC MODE
scaler1 coefficient, this scaler is compressing the signal.

SCINC1 FOR PANAROMIC MODE
scaler2 coefficient, this scaler is expanding the signal.

VOLUME AFTER APS
It's used to adjust the volume level after APS.

VERTICAL SCROLL
It's used to adjust the step width for scroll function.

14:9 HORIZANTAL START
It's used to adjust the horizontal blank start position for 14:9 mode.

14:9 HORIZANTAL STOP
It's used to adjust the horizontal blank stop position for 14:9 mode.

4:3 RGB HORIZANTAL AMPLITUDE
It's used to adjust the horizontal amplitude in 4:3 mode for RGB signals.

4:3 RGB CUSHION
It's used to adjust the cushion in 4:3 mode for RGB signals.

14:9 RGB HORIZANTAL AMPLITUDE
It's used to adjust the horizontal amplitude in 14:9 mode for RGB signals.

14:9 RGB CUSHION
It's used to adjust the cushion in 14:9 mode for RGB signals.

PANAROMIC RGB HORIZONTAL AMPLITUDE
It's used to adjust the horizontal amplitude in panoramic mode for RGB signals.

16:9 RGB HORIZANTOL AMPLITUDE
It's used to adjust the horizontal amplitude in 16:9 mode for RGB signals.

16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE
It's used to adjust the horizontal amplitude in 16:9 subtitle mode for RGB signals.

FULL RGB HORIZONTAL AMPLITUDE
It's used to adjust the horizontal amplitude in full mode for RGB signals.

TELETEXT HORZ_POS
It's used to adjust the horizontal position of teletext signal.

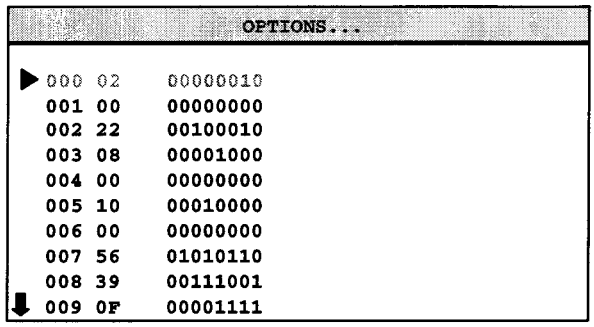
ADJUST	EXPLANATION	2835	2835W
		MULTI	MULTI - PAL I
000	White Point RED	255	255
001	White Point GREEN	126	036
002	Whit Point BLUE	127	019
003	AGC (Automatic Gain Control)	20 It will be adjusted to below 1V of Max. AGC for each TV.	
004	IF-PLL Negative	030	030
005	IF-PLL Positive	026	026
006	Y-Delay	003	002
007	Y-Delay SECAM	004	003
008	Y-Delay NTSC	005	005
009	Y-Delay OTHER	005	005
010	Vertical Position Offset	127	127
011	Vertical Amplitude Offset	127	127
012	Horizontal Position Offset	127	127
013	Horizontal Amplitude Offset	127	127
014	Vertical Blank Start (It will be used only at 4:3 tube for 16:9 mode adjustment)	149	119
015	Vertical Blank Stop (It will be used only at 4:3 tube for 16:9 mode adjustment)	013	034
016	Angle	132	132
017	Bow	126	131
018	4:3 Horz. Blank Start (It will be used only at 16:9 tube for 4:3 mode adjustment)	021	042
019	4:3 Horz. Blank Stop (It will be used only at 16:9 tube for 4:3 mode adjustment)	140	175
020	EHTV compensation	054	066
021	EHTTM compensation	004	001
022	EHTEW compensation	219	160
023	WDR	VIDEO PROCESSOR ADJUSTS ITSELF.	
024	WDG		
025	WDB		
026	CR		
027	CG		
028	CB		
029	COR coring level	015	031
030	REGULAR VERT_POS (Vertical Position)	128	129
031	REGULAR VERT_AMPL (Vertical Amplitude)	081	055
032	REGULAR VERT_SCOR (Vertical S Correction)	131	129
033	REGULAR VERT_SSYM (Vertical S Symmetry)	139	136
034	REGULAR TRAPEZE	125	127
035	REGULAR CUSHION	162	153
036	REGULAR HOR_COR_SYM(Horizontal Corner Symmetry)	137	132
037	REGULAR HOR_CORNER (Horizontal Corner)	094	113
038	REGULAR HORZ_POS (Horizontal Position)	055	052
039	REGULAR HORZ_AMPL (Horizontal Amplitude)	057	030
040	PANORAMIC VERT_POS	-	129
041	PANORAMIC VERT_AMPL	-	050
042	PANORAMIC VERT_SCOR	-	129
043	PANORAMIC VERT_SSYM	-	139
044	PANORAMIC TRAPEZE	-	125
045	PANORAMIC CUSHION	-	156
046	PANORAMIC HOR_COR_SYM	-	141
047	PANORAMIC HOR_CORNER	-	108
048	PANORAMIC HORZ_POS	-	030

049	PANORAMIC HORZ_AMPL	-	013
050	14:9 ZOOM VERT_POS	-	129
051	14:9 ZOOM VERT_AMPL	-	043
052	14:9 ZOOM VERT_SCOR	-	129
053	14:9 ZOOM VERT_SSYM	-	140
054	14:9 ZOOM TRAPEZE	-	125
055	14:9 ZOOM CUSHION	-	159
056	14:9 ZOOM HOR_COR_SYM	-	141
057	14:9 ZOOM HOR_CORNER	-	110
058	14:9 ZOOM HORZ_POS	-	053
059	14:9 ZOOM HORZ_AMPL	-	032
060	16:9 ZOOM VERT_POS	-	129
061	16:9 ZOOM VERT_AMPL	-	035
062	16:9 ZOOM VERT_SCOR	-	129
063	16:9 ZOOM VERT_SSYM	-	148
064	16:9 ZOOM TRAPEZE	-	125
065	16:9 ZOOM CUSHION	-	164
066	16:9 ZOOM HOR_COR_SYM	-	138
067	16:9 ZOOM HOR_CORNER	-	104
068	16:9 ZOOM HORZ_POS	-	036
069	16:9 ZOOM HORZ_AMPL	-	020
070	16:9 ZOOM SUBTITLE VERT_POS	-	137
071	16:9 ZOOM SUBTITLE VERT_AMPL	-	039
072	16:9 ZOOM SUBTITLE VERT_SCOR	-	124
073	16:9 ZOOM SUBTITLE VERT_SSYM	-	146
074	16:9 ZOOM SUBTITLE TRAPEZE	-	119
075	16:9 ZOOM SUBTITLE CUSHION	-	164
076	16:9 ZOOM SUBTITLE HOR_COR_SYM	-	162
077	16:9 ZOOM SUBTITLE HOR_CORNER	-	081
078	16:9 ZOOM SUBTITLE HORZ_POS	-	035
079	16:9 ZOOM SUBTITLE HORZ_AMPL	-	021
080	OSD Position	217	205
081	BCLTHR Beam current threshold	050	060
082	BCLG Beam current loop gain	008	007
083	ROTATION (TILT)	000	000
084	LSLSA Luma soft limiter	000	003
085	LSLSB Luma soft limiter	000	000
086	LSL2 Luma soft limiter	255	255
087	LSLTA Luma soft limiter	000	000
088	LSLTB Luma soft limiter	000	001
089	REFERENCE WDR RED (NORMAL)	088	092
090	REFERENCE WDR GREEN (NORMAL)	074	083
091	REFERENCE WDR BLUE (NORMAL)	075	082
092	REFERENCE CUTOFF RED	065	055
093	REFERENCE CUTOFF GREEN	068	069
094	REFERENCE CUTOFF BLUE	077	069
095	IBRM	200	215
096	WDRV	075	060
097	ACC_SAT (COLOUR OFFSET)	154	130
098	G2_CUTOFF_REFERENCE	200	220
099	G2_WDR_REFERENCE	090	090
100	POFS2 (RGB HORIZANTAL SHIFT)	053	034
101	REFERENCE WDR RED COOL	090	089
102	REFERENCE WDR GREEN COOL	078	082
103	REFERENCE WDR BLUE COOL	093	090
104	REFERENCE WDR RED WARM	096	104
105	REFERENCE WDR GREEN WARM	070	085
106	REFERENCE WDR BLUE WARM	073	080
107	STANDARD MODE BRIGHTNESS	027	043

108	STANDARD MODE COLOUR	050	047
109	STANDARD MODE CONTRAST	022	029
110	FULL VERT_POS (16:9 MODE)	128	129
111	FULL VERT_AMPL	093	055
112	FULL VERT_SCOR	131	129
113	FULL VERT_SSYM	133	136
114	FULL TRAPEZE	127	126
115	FULL CUSHION	148	153
116	FULL HOR_COR_SYM	137	136
117	FULL HOR_CORNER	109	109
118	FULL HORZ_POS	055	035
119	FULL HORZ_AMPL	057	020
120	BRIGHT MODE BRIGHTNESS	027	043
121	BRIGHT MODE COLOUR	050	050
122	BRIGHT MODE CONTRAST	030	032
123	SOFT MODE BRIGHTNESS	027	043
124	SOFT MODE COLOUR	050	058
125	SOFT MODE CONTRAST	017	020
126	PERSONAL MODE FACTORY SETTING BRIGHTNESS	027	043
127	PERSONAL MODE FACTORY SETTING COLOUR	050	050
128	PERSONAL MODE FACTORY SETTING CONTRAST	030	032
129	SCINC FOR PANORAMIC MODE	032	056
130	SCINC1 FOR PANORAMIC MODE	032	125
131	VOLUME AFTER APS		005
132	VERTICAL SCROLL	005	008
133	14:9 HORIZONTAL START (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	031
134	14:9 HORIZONTAL STOP (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	185
135	4:3 RGB HORIZONTAL AMPLITUDE	055	074
136	4:3 RGB CUSHION	163	150
137	14:9 RGB HORIZONTAL AMPLITUDE	-	055
138	14:9 RGB CUSHION	-	158
139	PANAROMIC RGB HORIZONTAL AMPLITUDE	-	031
140	16:9 RGB HORIZONTAL AMPLITUDE	-	027
141	16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE	-	027
142	FULL RGB HORIZONTAL AMPLITUDE	054	027
143	TELETEXT HORIZONTAL POSITION	101	095

14.3.OPTIONS MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. . In OPTIONS menu, some of the changed parameters are not stored automatically. To store the adjusted parameters, you should turn off and on TV.



Option 0. Video Processor Crystal Indication

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: Xa = note1 (Crystal indication)
B0: Xb = note1 (Crystal indication)

note 1:
Xa,Xb
0,1 : Pal M, Pal N, NTSC M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : No crystal

1,0 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1

Pin 34 : No crystal
Pin 35 : 4.43 (1 crystal)

1,1 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1, Pal M, Pal N, Ntsc M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : 4.43 (1 crystal)

Option 1. (0x01) Video Processor Decoder Mode Register

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: x = x
B0: x = x

Option 2. (0x18) Video Processor Blanking Control

B7: SWF = 1 (Subwoofer item at menu)
B6: Vsd = 0 (Vertical scan disable)
B5: x = x

B4: x = x
B3: x = x
B2: x = x
B1: LUMA = 1 Luma Soft Limiter Enabled
B0: BB = 1 Blue Background Option

Option 3. (0x19) Video Processor Cathode Drive Level

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: x = x
B0: country = note 0

Note 0: choice for others country option
1 : BG
0 : DK

Option 4.

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: x = x
B0: x = x

Option 5. CTI Avaliable, Mono AVL

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: x = x
B0: x = x

Option 6.

B7: = TEXT LANGUAGE 3
B6: = TEXT LANGUAGE 2
B5: = TEXT LANGUAGE 1
B4: x = x
B3: x = x
B2: x = x
B1: x = x
B0: x = x

Option 7. OPTIONHOTELACTIVE, PLL_VST, PIP Zoom Mode, PIP Position

B7: x = x
B6: x = x
B5: F = note 1
B4: x = x
B3: x = x
B2: PZM = x
B1: AV2 = 1 AV2 Output enabled
B0: x = x

note 1:
F :Frequency Mode
1: = Frequency Menu Item available
0: = Frequency Menu Item not available

Option 8. IF Frequency

B7:	x	=	x	
B6:	x	=	x	
B5:	IfI	=	0	note 3
B4:	IfD	=	0	note 4
B3:	IfM	=	note 5	
B2:	Aps	=	note 6	
B1:	Hp	=	note 7	
B0:	Hue	=	note 8	

note 3:
IfI
1 = IF I 39.5 MHz Great Britain I , Only UHF Tuner
0 = IF I 38.9 MHz Ireland I+ , Standard Tuner

note 4:
IfD
1 = IF DK 38.0 MHz
0 = IF DK 38.9 MHz

note 5:
IfM
1 = IF M,N 45.75 MHz S&N American Models , Tuner UV1336 (Only Pal M/N, Ntsc M)
0 = IF M,N 38.9 MHz Euro M,N Models , Standard Tuner

Note 6:
Aps (Only for PLL)
0 = A.P.S. done
1 = A.P.S. set

note 7:
Hp : Headphone available
0 = No headphone
1 = Headphone available

note 8:
Hue : Hue Available
0 = No Hue
1 = Hue available

Option 9. Standard Available

B7:	NM	=	note 1
B6:	PN	=	note 1
B5:	PM	=	note 1
B4:	K1	=	note 1
B3:	L	=	note 1
B2:	I	=	note 1
B1:	DK	=	note 1
B0:	BG	=	note 1

note 1:
0 = Standard not supported
1 = Standard available

Option 10. Scart, Combfilter, Teletext, Language

B7: x = x
B6: RGB = note 2
B5: FAV =
B4: AV2S =
B3: FSVHS = note 3
B2: BAV = note 4
B1: Sc2 = note 5
B0: BSVHS = note 6

note 2 :
RGB = RGB Menu Item active/inactive

0 = RGB Menu Item inactive
1 = RGB Menu Item active

note 3:
0 = Front S-VHS not supported
1 = Front S-VHS available

note 4:
0 = Back AV (AV-3) not supported
1 = Back AV (AV-3) available

note 5:
0 = Scart 2 not supported
1 = Scart 2 available

note 6:
0 = Back SVHS not supported
1 = Back SVHS available

Option 11. PLL Tuner Control 1 Byte

Pll tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	1	0	0	0	1	1	1	0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 12. PLL Tuner Control 2 Low Byte

Pll tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	0	1
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 13. PLL Tuner Control 2 Mid Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	1	0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	1	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 14. PLL Tuner Control 2 High Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	1	0	0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 15. PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	1	0	0	0	0	0	
Philips	UV1316MK2	0	0	0	0	1	0	1	0	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	
Siel	PT060	0	0	0	0	1	0	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	1	0	1	0	(AA hex)

Option 16. PLL Tuner VHF LOW – VHF HIGH Crossover High Byte

PII tuner VHF LOW - VHF HIGH crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	0	0	1	1	0	0	
Philips	UV1316MK2	0	0	0	0	1	1	0	0	(0C hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	1	0	1	
Siel	PT060	0	0	0	0	1	1	0	1	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	0	1	0	0	1	(09 hex)

Option 17. PLL Tuner VHF HIGH – UHF Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	0	0	0	0	1	0	
Philips	UV1316MK2	1	1	1	0	0	0	1	0	(E2 hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	1	0	1	0	0	0	1	0	
Siel	PT060	1	0	1	0	0	1	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	0	0	1	0	(A2 hex)

Option 18. PLL Tuner VHF HIGH – UHF Crossover High Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	0	1	1	1	1	0	
Philips	UV1316MK2	0	0	0	1	1	1	1	0	(1D hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	1	1	1	1	0	
Siel	PT060	0	0	0	1	1	1	1	0	

Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0
Thomson	CTT5020	0	0	0	1	1	0	1	1 (1B hex)

Option 19. PIP PLL Tuner Control 1 Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 20. PIP PLL Tuner Control 2 Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 21. PIP PLL Tuner Control 2 Mid Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	1	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 22. PIP PLL Tuner Control 2 High Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 23. PIP PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	0	1	0	1	0	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	
Siel	PT060	0	0	0	0	1	0	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	1	0	1	0	(AA hex)

Option 24. PIP PLL Tuner VHF LOW – VHF HIGH Crossover High Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	0	1	1	0	0	(0C hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	1	0	1	
Siel	PT060	0	0	0	0	1	1	0	1	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	0	1	0	0	1	(09 hex)

Option 25. PIP PLL Tuner VHF HIGH – UHF Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	1	1	0	0	0	1	0	(E2 hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	1	0	1	0	0	0	1	0	
Siel	PT060	1	0	1	0	0	1	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	0	0	1	0	(A2 hex)

Option 26. PIP PLL Tuner VHF HIGH – UHF Crossover High Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	1	1	1	1	0	(1D hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	1	1	1	1	0	
Siel	PT060	0	0	0	1	1	1	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	1	1	0	1	1	(1B hex)

Option 27. Language Available 1

B7: L7 = DANISH
B6: L6 = SWEDISH
B5: L5 = ITALIAN
B4: L4 = PORTUGUESE
B3: L3 = SPANISH
B2: L2 = FRENCH
B1: L1 = GERMAN
B0: L0 = ENGLISH
1: Language available
0: Language not available

Option 28. Language Available 2

B7: L15 = CROATIC
B6: L14 = POLISH
B5: L13 = SLOVAK
B4: L12 = CZECH
B3: L11 = HUNGARY
B2: L10 = GREEK
B1: L9 = TURKEY
B0: L8 = NORWEGIAN
1: Language available
0: Language not available

Option 29. Language Available 3 and Zoom Mode Available

B7: ZSP = 16:9 ZOOM SUBTITLE MODE
B6: ZSB = 16:9 ZOOM MODE
B5: ZCN = 14:9 ZOOM MODE
B4: PNM = 1 (Panaromic zoom mode)
B3: Tub = note 2
B2: Z.Def = note 3
B1: PMK = note 1
B0:

1: Available
0: Not available

note 1 :
PMK : Picture mode key
0 : Not available picture mode key from RC
1 : available picture mode key from RC

note 2:
Tub : Tube size

0 = 16:9 Tube size
1 = 4:3 Tube size

note 3:
Z.Def : Zoom Default Mode

0 = 16:9 mode default
1 = 4:3 mode default

Option 30. Country

B7: C4 = note 1
B6: C3 = note 1
B5: C2 = note 1
B4: C1 = note 1
B3: C0 = note 1
B2: x = x
B1: x = x
B0: x = x

note 1:
C5,C4,C3,C2,C1,C0 = Country

0, 0, 0,0,0	=	OTHER,	Not allowed
0, 0, 0,0,1	=	D,	Germany
0, 0, 0,1,0	=	A,	
0, 0, 0,1,1	=	CH,	
0, 0, 1,0,0	=	I,	
0, 0, 1,0,1	=	F,	
0, 0, 1,1,0	=	RSM,	
0, 0, 1,1,1	=	B,	
0, 1, 0,0,0	=	DK,	
0, 1, 0,0,1	=	S,	
0, 1, 0,1,0	=	N,	
0, 1,0,1,1	=	FIN,	
0, 1,1,0,0	=	GB,	
0, 1,1,0,1	=	IRL,	
0, 1,1,1,0	=	IS,	
0, 1,1,1,1	=	NL,	
1, 0,0,0,0	=	E,	
1, 0,0,0,1	=	P,	
1, 0,0,1,0	=	PL,	
1, 0,0,1,1	=	CZ,	
1, 0,1,0,0	=	H,	
1, 0,1,0,1	=	HR,	
1, 0,1,1,0	=	GR,	
1, 0,1,1,1	=	TR	

Option 31. Prescaler MSP FM (AVL=OFF)

	b7	b6	b5	b4	b3	b2	b1	b0
prescaler MSP FM (AVL = OFF)	0	0	0	0	1	0	0	0

	b7	b6	b5	b4	b3	b2	b1	b0	
prescaler MSP FM (AVL = OFF)	0	0	0	0	1	0	0	0	(if virtual dolby option is available)

Option 32. Prescaler MSP NICAM (AVL=OFF)

	b7	b6	b5	b4	b3	b2	b1	b0
prescaler MSP NICAM (AVL = OFF)	0	0	0	1	1	1	1	1

	b7	b6	b5	b4	b3	b2	b1	b0	
prescaler MSP NICAM (AVL = OFF)	0	0	0	1	1	1	1	1	(if virtual dolby option is available)

Option 33. Prescaler MSP SCART (AVL=OFF)

	b7	b6	b5	b4	b3	b2	b1	b0	
prescaler MSP SCART (AVL = OFF)	0	0	0	0	1	1	0	0	
prescaler MSP SCART (AVL = OFF)	0	0	0	1	1	0	0	1	(if virtual dolby option is available)

Option 34. Prescaler MSP I2S (AVL=OFF)

	b7	b6	b5	b4	b3	b2	b1	b0
prescaler MSP I2S (AVL = OFF) (if virtual dolby option is available)	not defined yet							

Option 35. Not used

B7:	x	=	note 7
B6:	x	=	note 6
B5:	x	=	note 5
B4:	x	=	note 4
B3:	AV2S	=	Scart2 SVHS
B2:	Macro	=	Macrovision
B1:	DP	=	Dolby Prologic
B0:	VD	=	Virtual Dolby

Option 36. Not used

B7:	x	=	note 7
B6:	TAT	=	1 Tilt and trapez enabled
B5:	SWF	=	1 Subwoofer enabled
B4:	VLO	=	1 Variable line out
B3:	VBUS	=	1 Vestelbus enabled
B2:	x	=	x
B1:	DVD	=	1 DVD enabled
B0:	DVB	=	1 DVB enabled

Option 37. Reserved for USA

Option 38. TV Teletext Mode Selection, Child Lock, Equalizer Country

B7:	VCR	=	note 7
B6:	C	=	note 6
B5:	LM	=	note 5
B4:	EQ	=	note 4
B3:	x	=	x
B2:	CL	=	note 2
B1:	T1	=	note 1
B0:	T0	=	note 1

note 1:
Teletext selection
T1, T0:
0,0 = No TV Text
0,1 = Simple TV Text (One page)
1,1 = Fasttext/Toptext TV Text (Eight pages)

note 2 :
CL = Child Lock
0 = Off
1 = On (Active)

note 3 :

RGB	=	RGB Menu Item active/inactive
0	=	RGB Menu Item inactive
1	=	RGB Menu Item active

note 4 :

EQ	=	Equalizer available
0	=	Equalizer not available
1	=	Equalizer available

note 5 :

LM	=	List Mode available
0	=	List Mode not available
1	=	List Mode available

note 6 :

C	=	Country Line available / Aps available or not
0	=	Country Line not available / Aps not available
1	=	Country Line available / Aps available

note 7 :

VCR	=	VCR Menu Item available / not available
0	=	VCR Menu Item not available
1	=	VCR Menu Item available

Option 39. Personal Preferance Equalizer Band 1

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 1	0	0	0	0	0	1	1	0

Option 40. Personal Preferance Equalizer Band 2

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 2	0	0	0	0	0	1	1	0

Option 41. Personal Preferance Equalizer Band 3

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 3	0	0	0	0	0	1	1	0

Option 42. Personal Preferance Equalizer Band 4

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 4	0	0	0	0	0	1	1	0

Option 43. Personal Preferance Equalizer Band 5

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 5	0	0	0	0	0	1	1	0

Option 44. Sound Efect (Standard; Music; Speech; Jazz; Pp)

	b7	b6	b5	b4	b3	b2	b1	b0
SOUND EFFECT	0	0	0	0	0	1	1	0

Option 45. Volume Offset Left

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET LEFT	0	0	0	0	0	1	1	0

Option 46. Volume Offset Right

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET RIGHT	0	0	0	0	0	1	1	0

Option 47. Volume Offset Center

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET CENTER	0	0	0	0	0	1	1	0

Option 48. Volume Offset Rear

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET REAR	0	0	0	0	0	1	1	0

Option 49. Surround Delay

	b7	b6	b5	b4	b3	b2	b1	b0
SURROUND DELAY	0	0	0	0	0	0	0	1

Option 50. FM Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
FM PRESCALE for Stereo	0	0	0	0	1	1	0	0

	b7	b6	b5	b4	b3	b2	b1	b0
FM PRESCALE for Dolby	0	0	0	0	1	0	0	1

Note: if virtual dolby is available, this option is not used.

Option 51. NICAM Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
NICAM Prescale for Stereo	0	0	1	0	1	1	0	1

	b7	b6	b5	b4	b3	b2	b1	b0
3D Panorama	0	0	0	0	1	0	1	1

	b7	b6	b5	b4	b3	b2	b1	b0
NICAM Prescale for Dolby	0	0	0	0	1	1	1	0

Note: if virtual dolby is available, this option is not used.

Option 52. Scart Input Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
Scart Input Prescale for Stereo	0	0	0	0	1	0	0	0

	b7	b6	b5	b4	b3	b2	b1	b0
Scart Input Prescale for Dolby	0	0	0	0	1	1	1	1

	b7	b6	b5	b4	b3	b2	b1	b0	
prescaler MSP Scart (AVL = OFF)	0	0	0	1	1	0	0	1	(if virtual dolby option is available)

Note: if virtual dolby is available, this option is not used.

Option 53. I2S Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
I2S Prescale for Stereo	0	0	0	0	0	1	1	0

	b7	b6	b5	b4	b3	b2	b1	b0
I2S Prescale for Dolby	0	0	0	0	0	1	1	0

Note: if virtual dolby is available, this option is not used.

Option 54. Scart Output Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
Scart Output Prescale	0	1	1	1	1	1	1	1

Option 55. Speaker Setup

	b7	b6	b5	b4	b3	b2	b1	b0
Speaker Setup (L/R, L/C/R, L/R/S, L/C/R/S)	0	0	0	0	0	0	0	0

Option 56. Audio Options Available Or Not

Attention: All bits on the Option 56 must be the "0" for MONO TV SETS

B7: nicam = note 7
B6: ASD = note 6
B5: VRS = note 5
B4: CRM = note 4
B3: ... = x
B2: LBE = note 2
B1: Spa = note 1
B0: Avl = note 0

note 7 :
nicam = nicam available
0 = nicam not available
1 = nicam available

note 6 :
ASD = Auto Sound Detection available/not available
0 = Auto Sound Detection not available
1 = Auto Sound Detection available

note 5 :
VRS = Virtual Surround
0 = VRS not available
1 = VRS available

note 4 :
CRM = CARRIER MUTE OFF/ON
0 = Sound carrier mute is ON in the Stereo Sound IC
1 = Sound carrier mute is OFF in the Stereo Sound IC (i.e. option available)

note 2 :
LBE = LBE (Dynamic Bass)
0 = LBE not available
1 = LBE available

note 1 :
Spa = Spatial Efect available
0 = Spatial Efect not available
1 = Spatial Efect available

note 0 :
Avl = Automatic volume level available on the Menu
0 = Automatic volume level not available
1 = Automatic volume level available

Option 57. Stereo Threshold

B7: b7 = note 1 Remark :
B6: b6 = note 1
B5: b5 = note 1 -Threshold for all FM A2 signals to switch from MONO to STEREO.
B4: b4 = note 1 -For first check after programme change half value is changed (0Ch) 19h/2
B3: b3 = note 1 -For switching from STEREO back to MONO: 19h/4 *3
B2: b2 = note 1
B1: b1 = note 1
B0: b0 = note 1

note 1 :

	b7	b6	b5	b4	b3	b2	b1	b0
MSP Stereo/Mono Threshold	0	0	0	1	1	0	0	1

Option 58. MSP Audio Flags

B7: b7 = x
B6: b6 = x
B5: b5 = x
B4: Trs = note 1
B3: Trb = note 1
B2: Bbe = note 1
B1: Spa = note 1
B0: Avl = note 1

note 1 :
Defines whether the feature is toggled ON or OFF in the menu and stored.
0 : OFF
1 : ON

Option 59. NICAM Threshold

	b7	b6	b5	b4	b3	b2	b1	b0
MSP NICAM Threshold	0	1	1	0	0	1	0	0

Option 60. Power Delay Time

B7: NZ = x
B6: HM = x
B5: L5 = note 3
B4: L4 = note 3
B3: L3 = note 3
B2: L2 = note 3
B1: L1 = note 3
B0: L0 = note 3

note 3:

	L7	L6	L5	L4	L3	L2	L1	L0
Default Value :	x	x	1	1	0	0	0	0

1000 MSEC = 1SN

Number	L7L6L5L4L3L2L1L0		Delay	
0	00000000	=	4	sec
1	00000001	=	4,25	sec
2	00000010	=	4,5	sec
3	00000011	=	4,75	sec
4	00000100	=	5	Sec
5	00000101	=	5,25	Sec
6	00000110	=	5,5	Sec
7	00000111	=	5,75	Sec
8	00001000	=	6	sec
9	00001001	=	6,25	sec
10	00001010	=	6,5	sec
11	00001011	=	6,75	sec
12	00001100	=	7	sec
13	00001101	=	7,25	sec
14	00001110	=	7,5	sec
15	00001111	=	7,75	sec
16	00010000	=	8	sec
17	00010001	=	8,25	sec
18	00010010	=	8,5	sec
19	00010011	=	8,75	sec

Number	L7L6L5L4L3L2L1L0		Delay	
32	00100000	=	12	sec
33	00100001	=	12,25	sec
34	00100010	=	12,5	sec
35	00100011	=	12,75	sec
36	00100100	=	13	sec
37	00100101	=	13,25	sec
38	00100110	=	13,5	sec
39	00100111	=	13,75	sec
40	00101000	=	14	sec
41	00101001	=	14,25	sec
42	00101010	=	14,5	sec
43	00101011	=	14,75	sec
44	00101100	=	15	sec
45	00101101	=	15,25	sec
46	00101110	=	15,5	sec
47	00101111	=	15,75	sec
48	00110000	=	16	sec
49	00110001	=	16,25	sec
50	00110010	=	16,5	sec
51	00110011	=	16,75	sec

20	00010100	=	9	sec
21	00010101	=	9,25	sec
22	00010110	=	9,5	sec
23	00010111	=	9,75	sec
24	00011000	=	10	sec
25	00011001	=	10,25	sec
26	00011010	=	10,5	sec
27	00011011	=	10,75	sec
28	00011100	=	12	sec
29	00011101	=	12,25	sec
30	00011110	=	12,5	sec
31	00011111	=	12,75	sec

52	00110100	=	17	sec
53	00110101	=	17,25	sec
54	00110110	=	17,5	sec
55	00110111	=	17,75	sec
56	00111000	=	18	sec
57	00111001	=	18,25	sec
58	00111010	=	18,5	sec
59	00111011	=	18,75	sec
60	00111100	=	19	sec
61	00111101	=	19,25	sec
62	00111110	=	19,5	sec
63	00111111	=	19,75	sec

	76543210
0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111
16	00010000
17	00010001
18	00010010
19	00010011
20	00010100
21	00010101
22	00010110
23	00010111
24	00011000
25	00011001
26	00011010
27	00011011
28	00011100
29	00011101
30	00011110
31	00011111

Bit Positions

Colour Code

	76543210
32	00100000
33	00100001
34	00100010
35	00100011
36	00100100
37	00100101
38	00100110
39	00100111
40	00101000
41	00101001
42	00101010
43	00101011
44	00101100
45	00101101
46	00101110
47	00101111
48	00110000
49	00110001
50	00110010
51	00110011
52	00110100
53	00110101
54	00110110
55	00110111
56	00111000
57	00111001
58	00111010
59	00111011
60	00111100
61	00111101
62	00111110
63	00111111

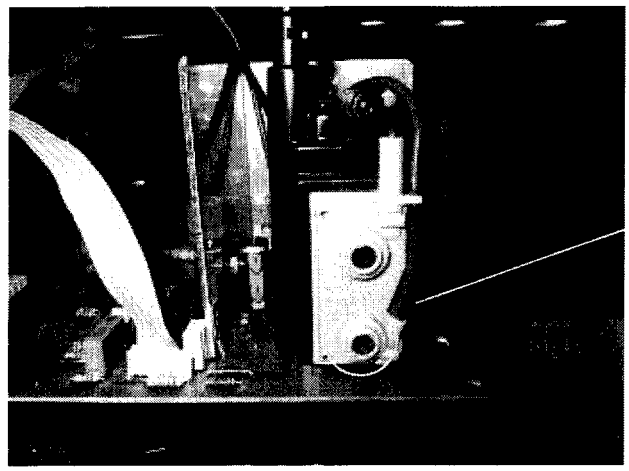
14.4.OPTION TABLE RECOMMENDED VALUES

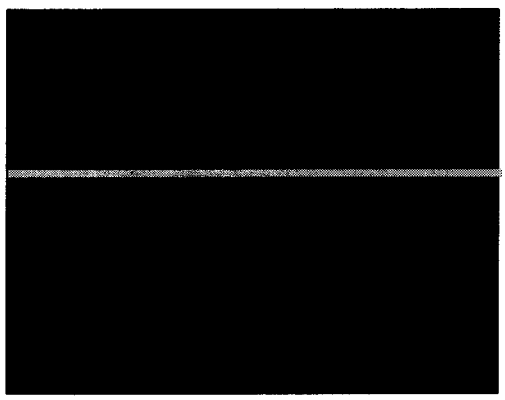
X listed in the option can be 0 or 1

OPTION	2835 MULTI	2835W MULTI	2835W PAL I
000	X2 XXXXXX10	X2 XXXXXX10	X2 XXXXXX10
001	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
002	23 001XXX11	23 001XXX11	23 001XXX11
003	XX XXXXXXX0	XX XXXXXXX0	XX XXXXXXX0
004	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
005	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
006	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
007	XX XX0XXX1X	XX XX0XXX1X	XX XX0XXX1X
008	A1 11000001	01 00000001	01 00000001
009	0B 00001111	0B 00001111	04 00001111
010	X2 XXXXX011	X7 XXXXX111	X7 XXXXX111
011	8E 10001110	8E 10001110	8E 10001110
012	03 00000011	03 00000011	03 00000011
013	06 00000110	06 00000110	06 00000110
014	15 10000101	15 10000101	15 10000101
015	AA 10101010	AA 10101010	AA 10101010
016	09 00001001	09 00001001	09 00001001
017	A2 10100010	A2 10100010	A2 10100010
018	1B 00011011	1B 00011011	1B 00011011
019	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
020	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
021	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
022	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
023	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
024	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
025	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
026	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
027	FF 11111111	FF 11111111	FF 11111111
028	FF 11111111	FF 11111111	FF 11111111
029	FF 11111111	EF 11101111	EF 11101111
030	XX XXXXXXX	XX XXXXXXX	XX XXXXXXX
031	0F 00001111	0F 00001111	0F 00001111
032	23 00100011	23 00100011	23 00100011
033	0E 00001110	0E 00001110	0E 00001110
034	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
035	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
036	X4 XXXXX1XX	X4 XXXXX1XX	X4 XXXXX1XX
037	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
038	AF 11001111	AF 11001111	AF 11001111
039	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
040	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
041	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
042	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
043	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
044	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
045	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
046	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
047	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
048	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
049	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
050	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
051	41 01000001	41 01000001	41 01000001
052	1B 00011011	1B 00011011	1B 00011011
053	06 00000110	06 00000110	06 00000110

054	75	01110101	75	01110101	75	01110101
055	00	00000000	00	00000000	00	00000000
056	DE	11011110	DE	11011110	DE	11011110
057	19	00011001	19	00011001	19	00011001
058	00	00000000	00	00000000	00	00000000
059	64	01100100	64	01100100	64	01100100
060	10	00010000	10	00010000	10	00010000

14.5.SCREEN ADJUSTMENT (FBT SCREEN)



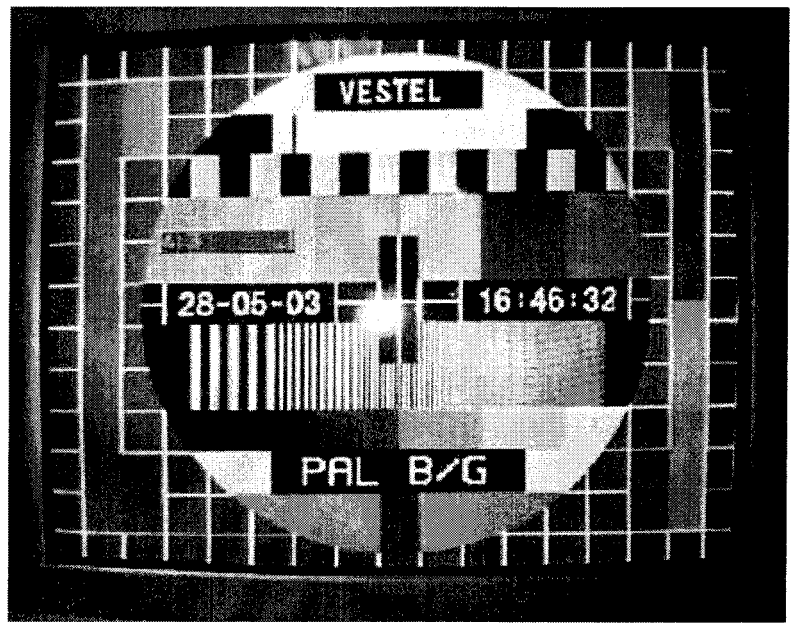


From the option list change option 2 bit 6 from 0 to 1 for disabling vertical scan. Adjust horizontal line via screen adjust pot. as thin as possible. Then press 0 to leave service menu.

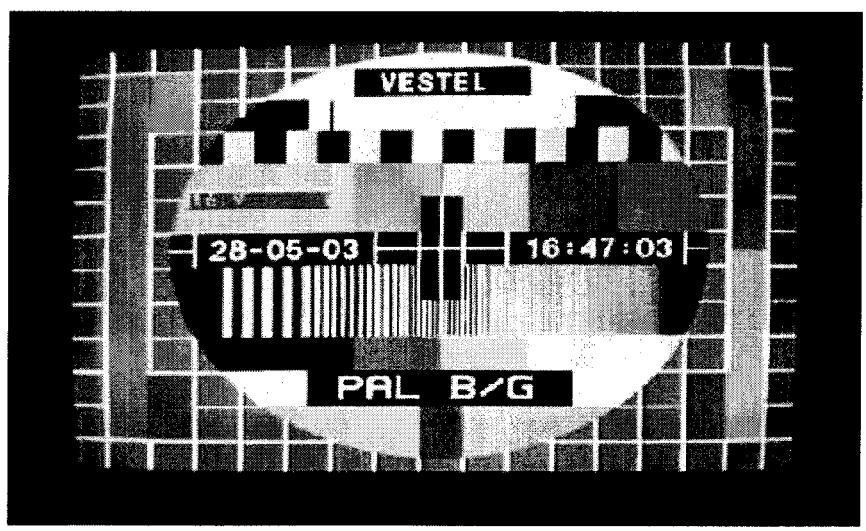
14.6.GEOMETRY ADJUSTMENT

4:3 FORMATS

4:3 MODE

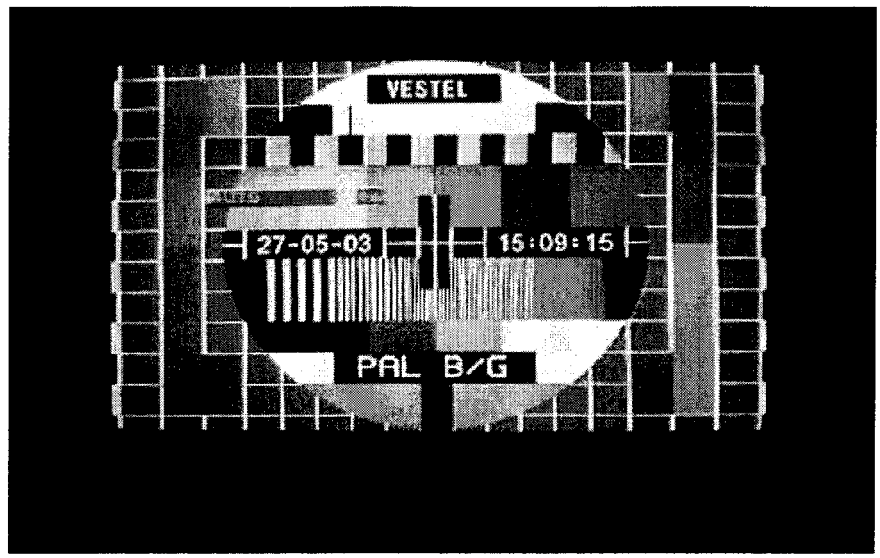


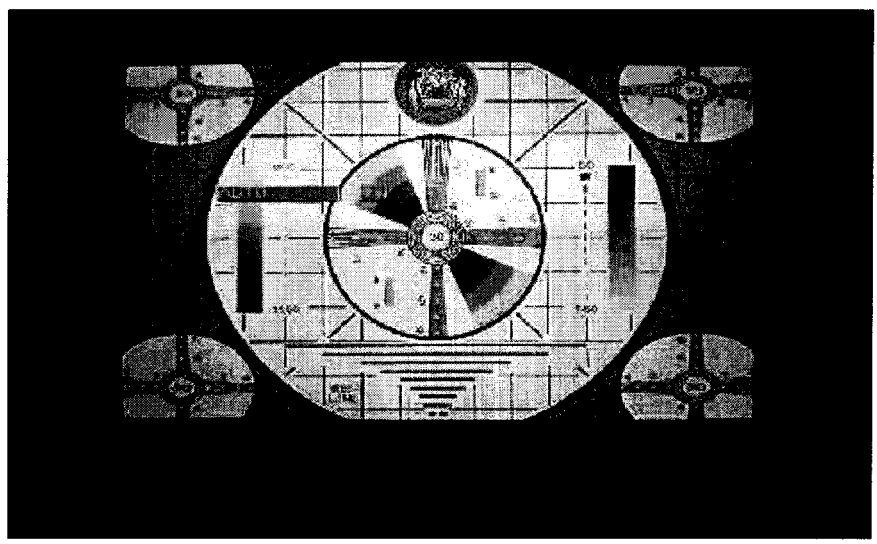
16:9 MODE



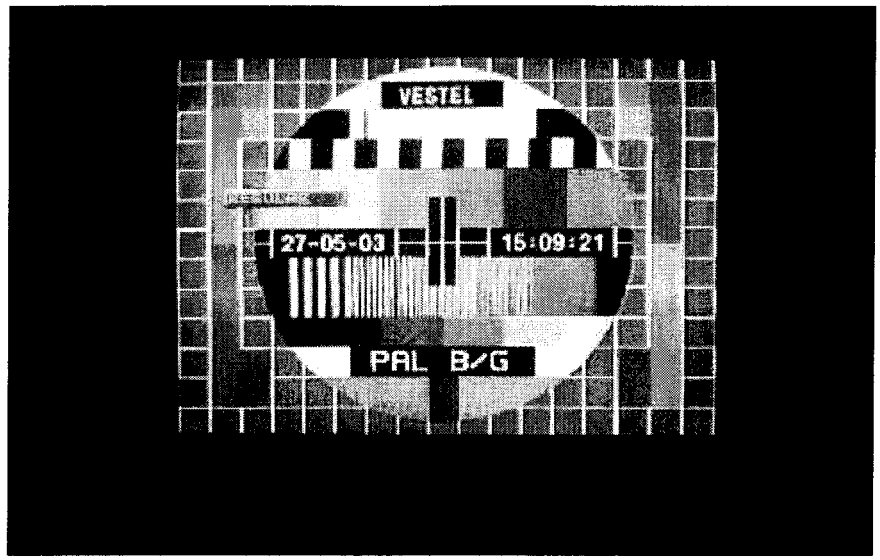
16:9 FORMATS

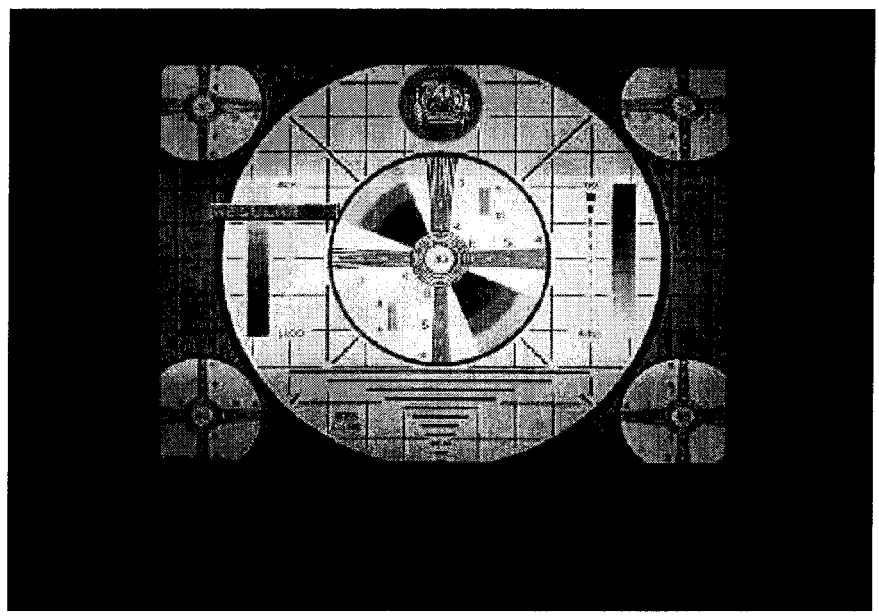
AUTO MODE



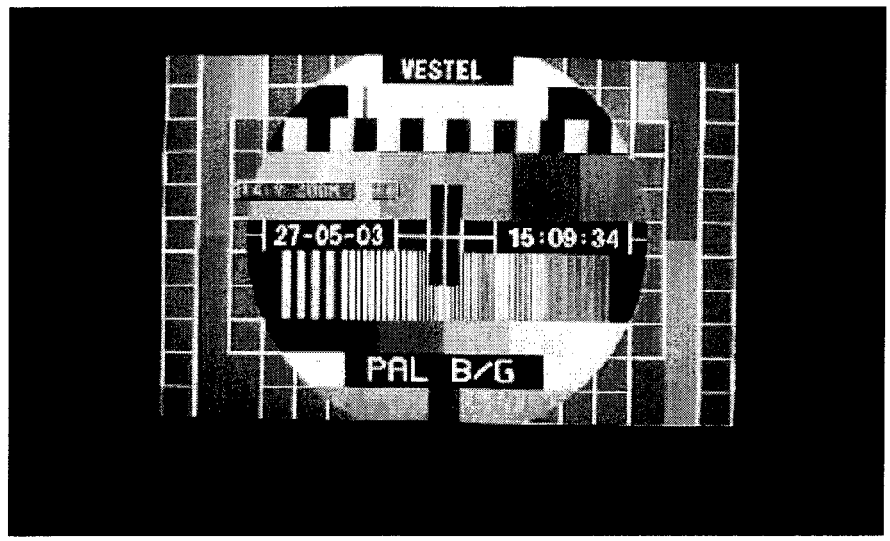


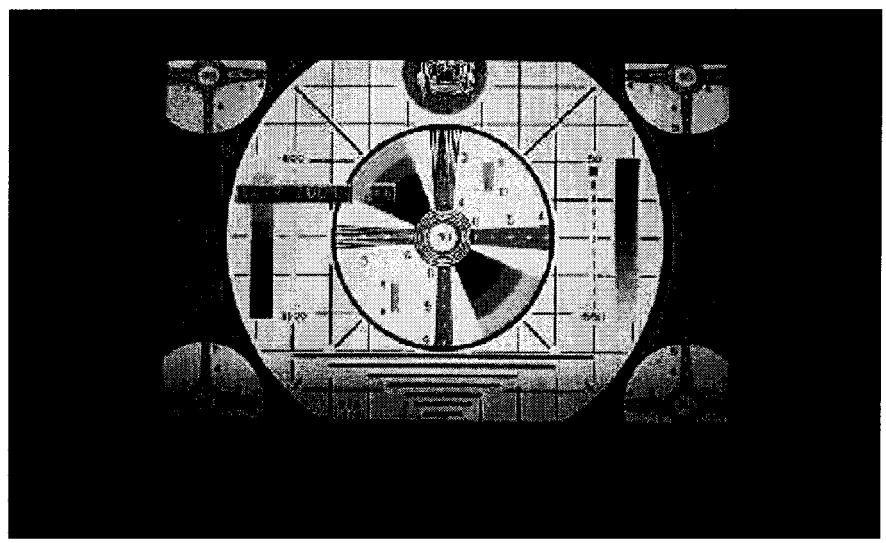
REGULAR MODE



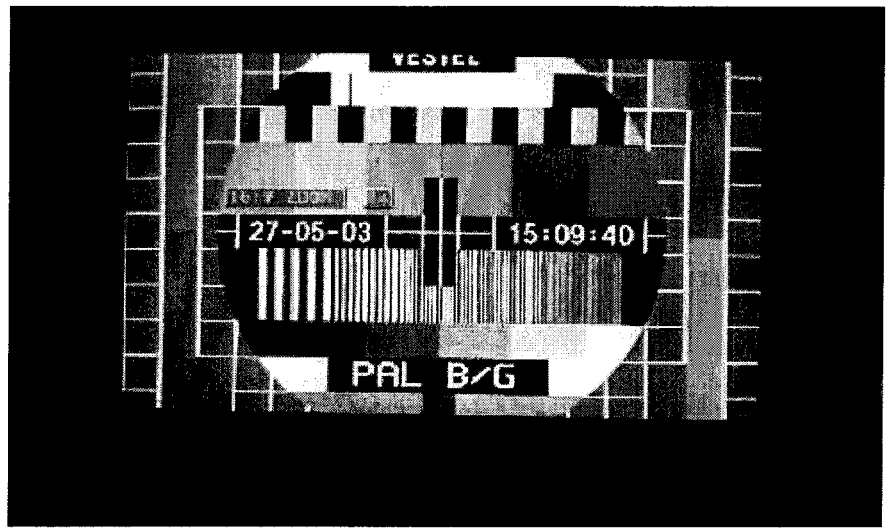


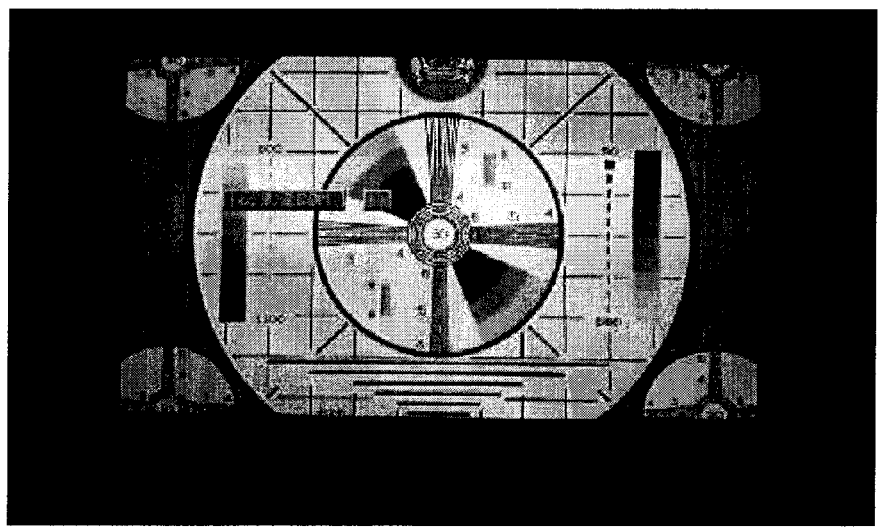
ZOOM 14:9 MODE



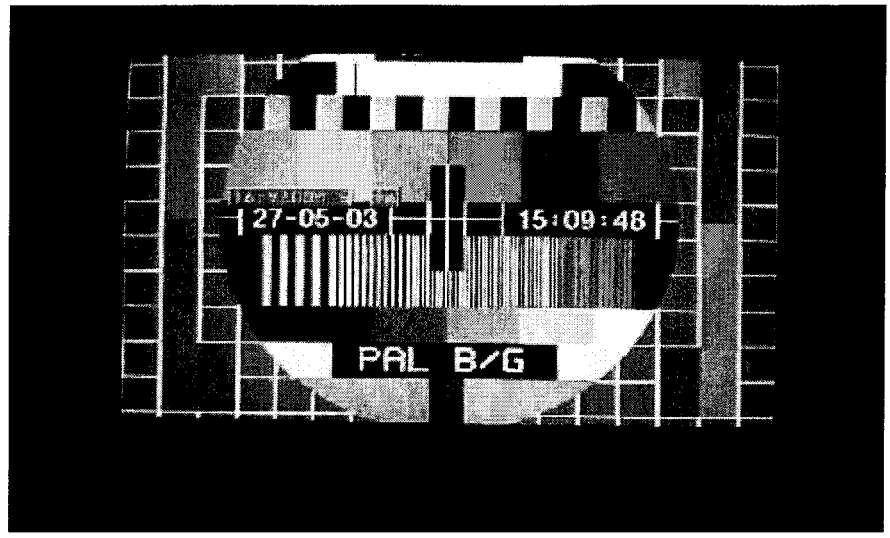


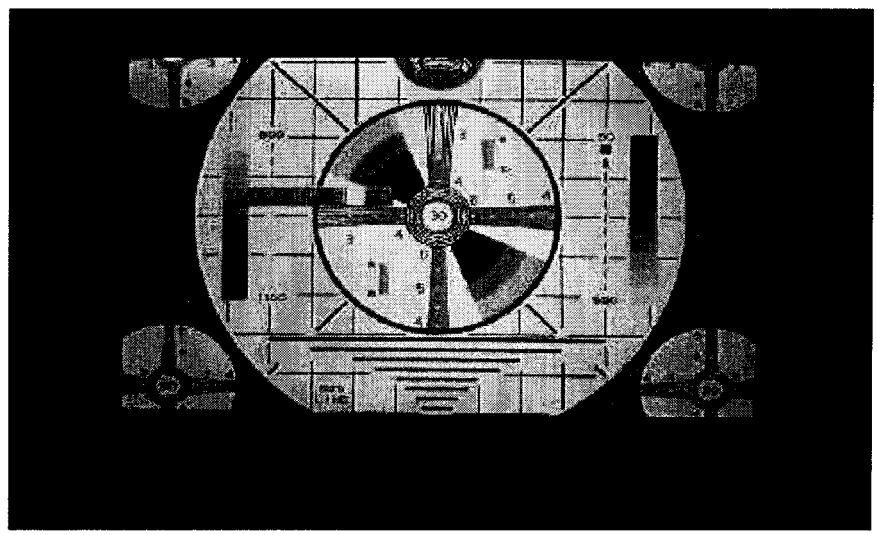
ZOOM 16:9 MODE



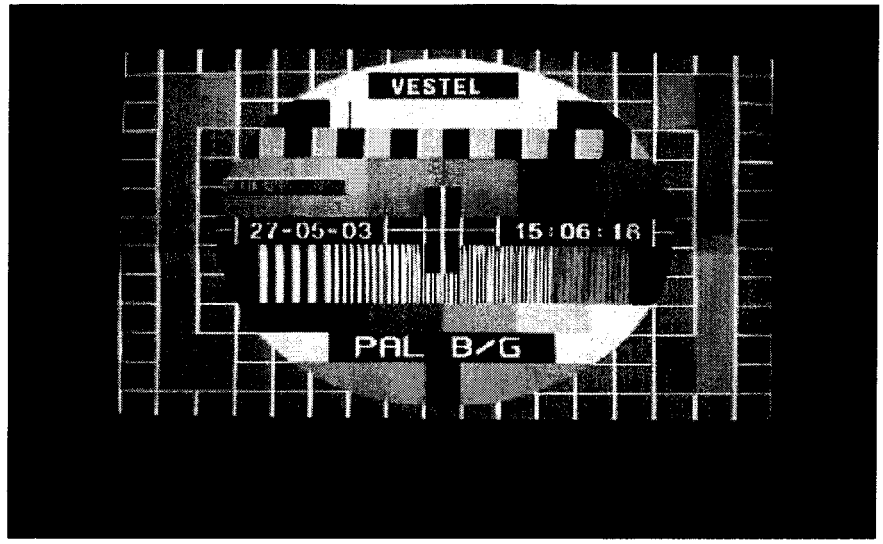


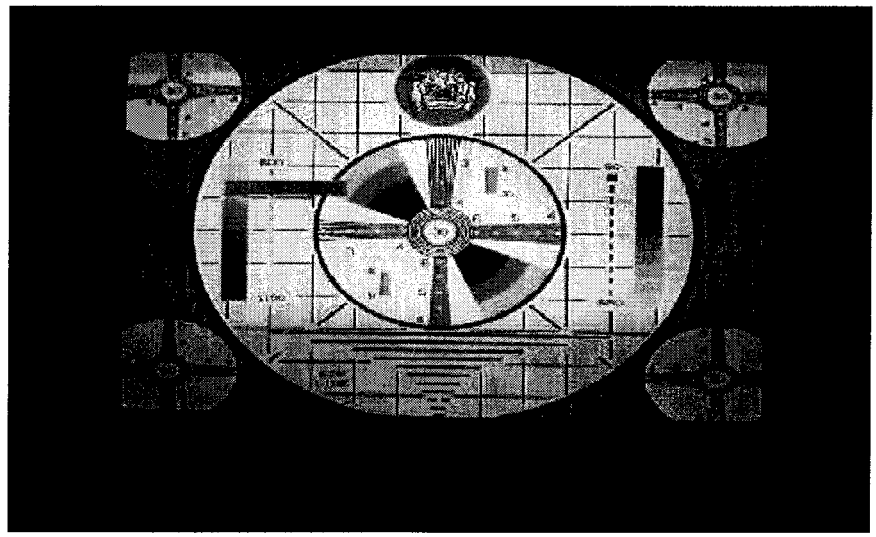
SUBTITLE ZOOM MODE



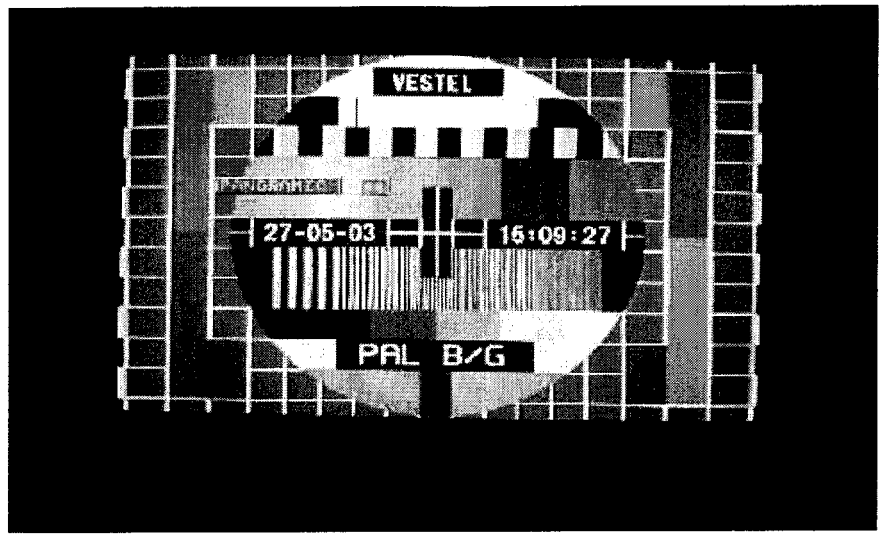


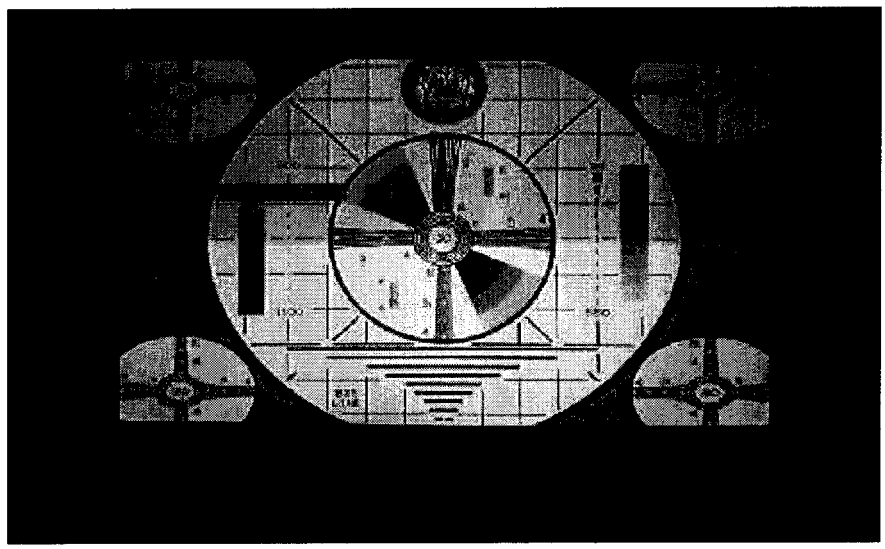
FULL MODE



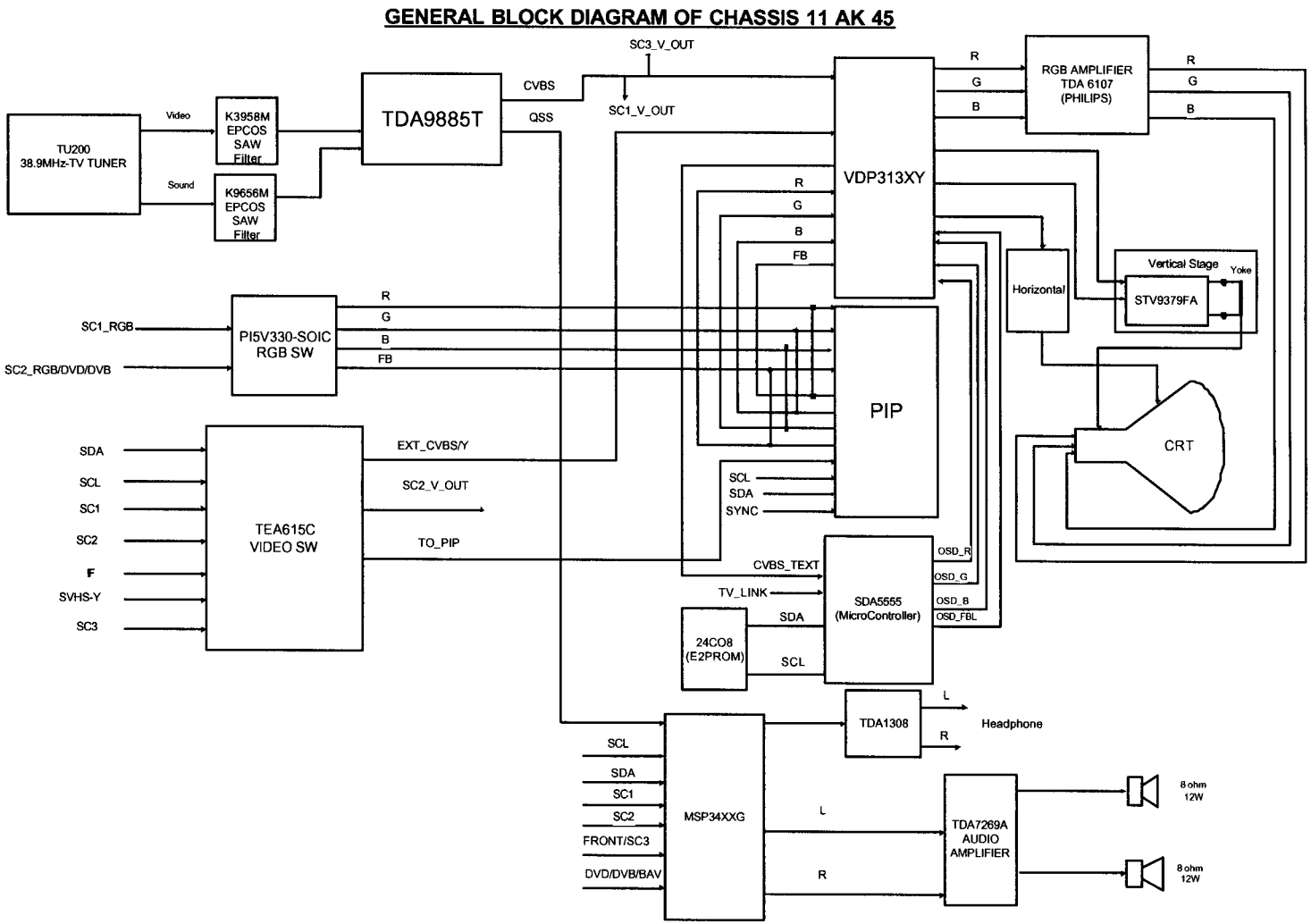


PANOROMIC MODE

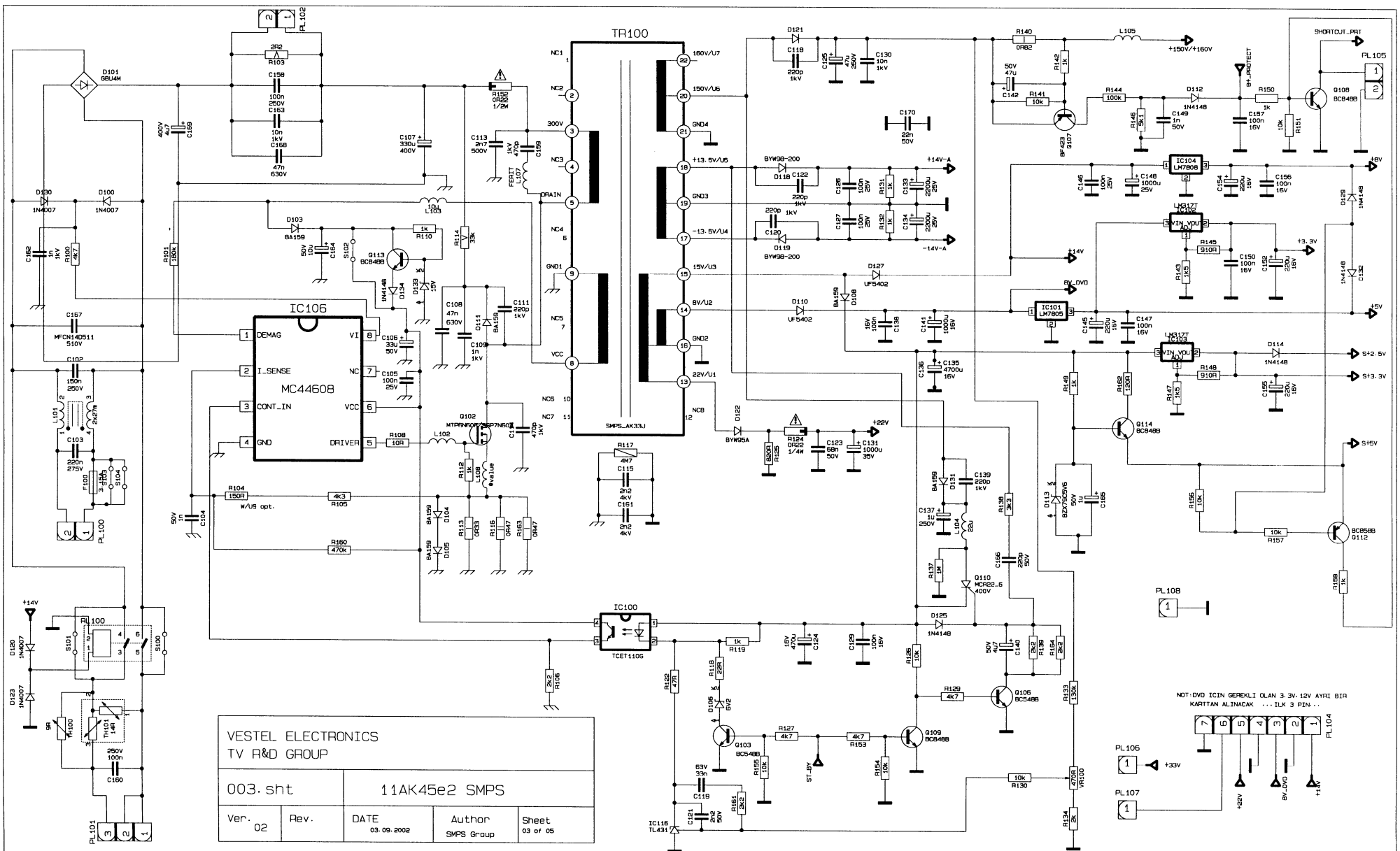


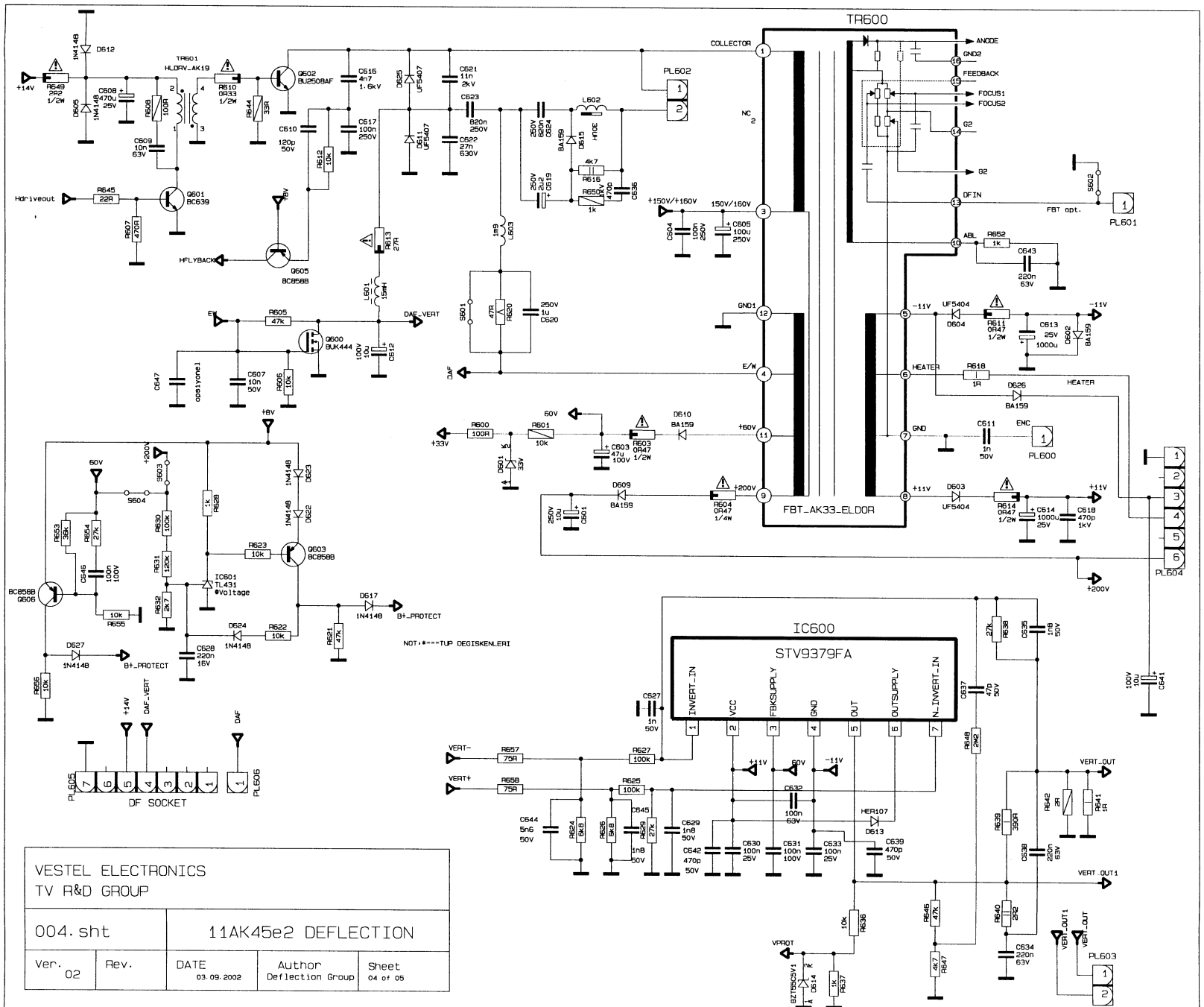


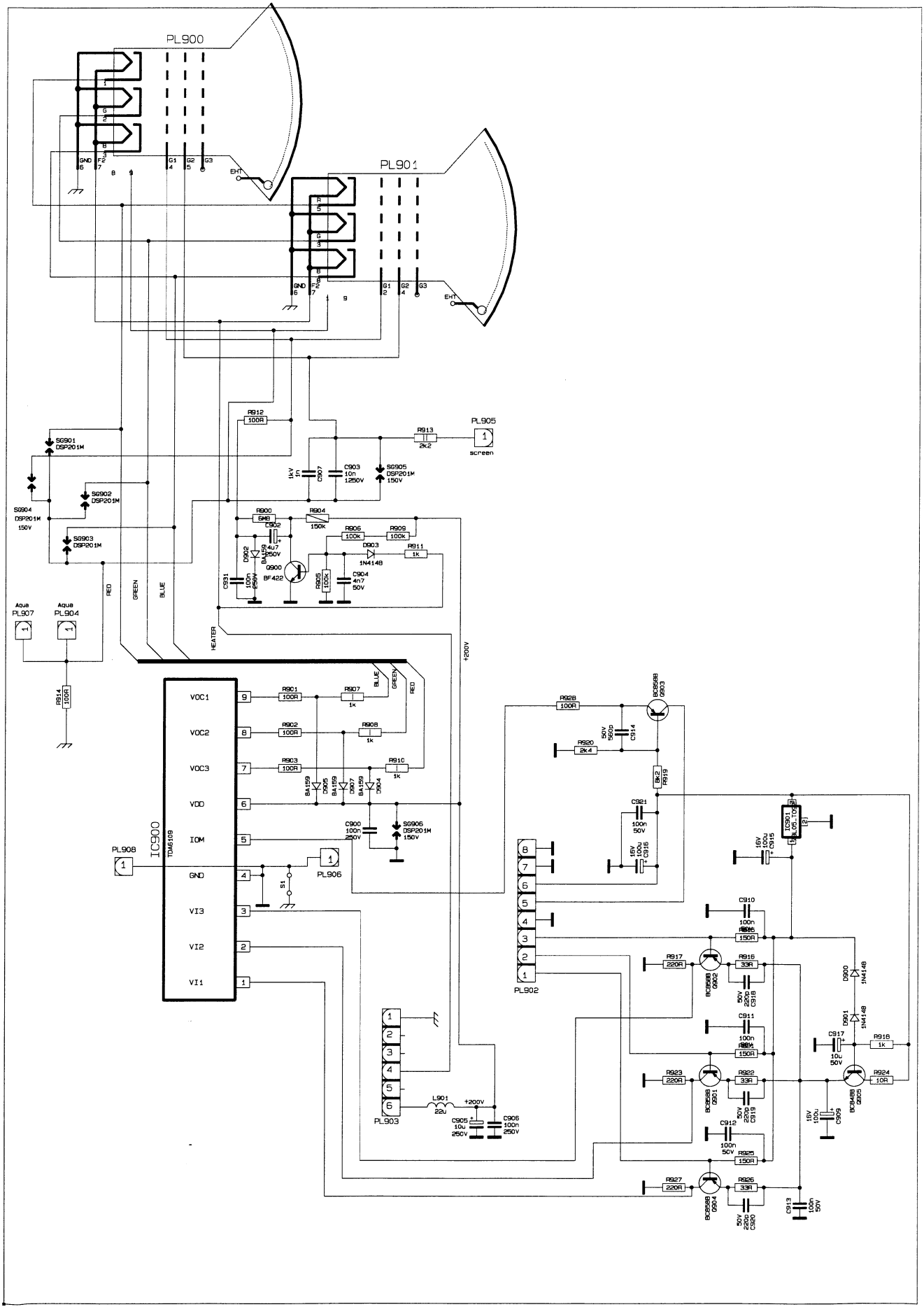
16.BLOCK DIAGRAM

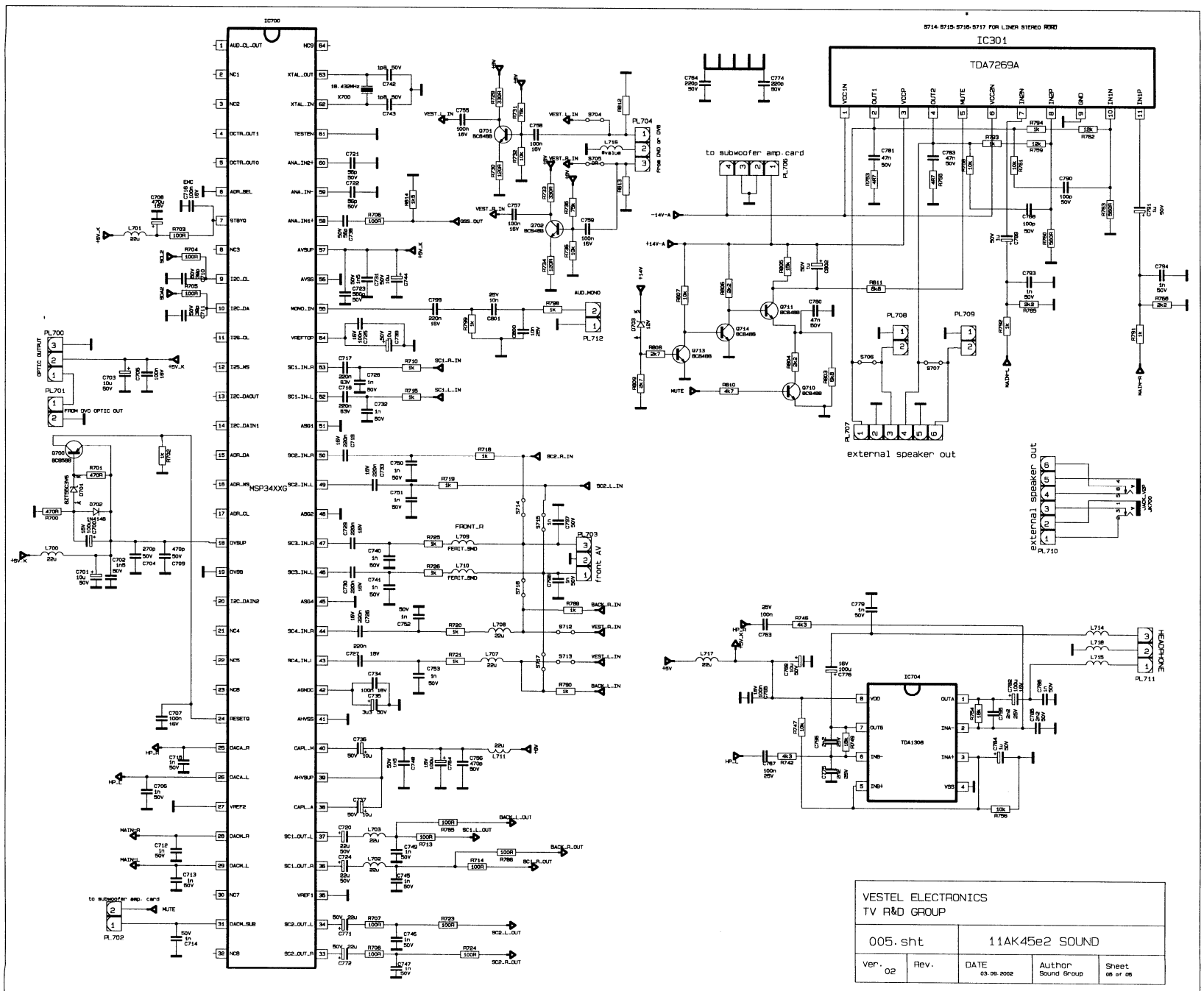


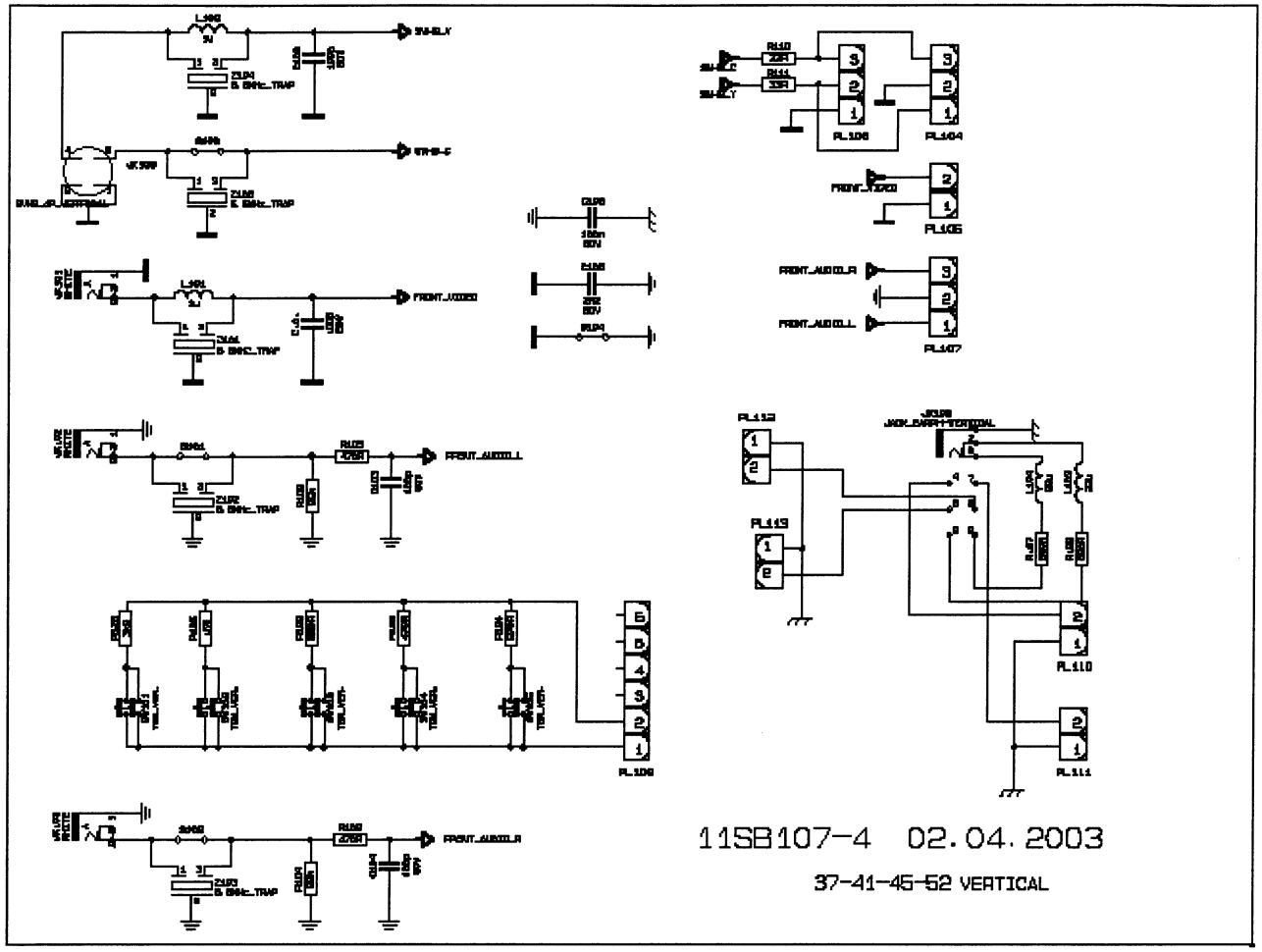
CHASSIS 11 AK 45 E2


TR100
IC106
MC44608
DEMAG
I_SENSE
CONT_IN
GND
VI
NC
VCC
DRIVER
IC100
TCET1106
IC104 LM7808
IC101 LM7805
IC102 LM317T
IC103 LM317T
SMPS_AK33J
VESTEL ELECTRONICS
TV R&D GROUP
003.sht
11AK45e2 SMPS
Ver. 02
Rev.
DATE 03.09.2002
Author SMPS Group
Sheet 03 of 05
NOT:DVD ICIN GEREKLI OLAN 3.3V,12V AYRI BIR KARTTAN ALINACAK ...ILK 3 PIN...
+14V-A
-14V-A
+8V
+5V
+3.3V
+2.5V
+15V
+22V
+33V
BV_DVD
ST_BY
SHORTCUT_PAT
BH_PROTECT

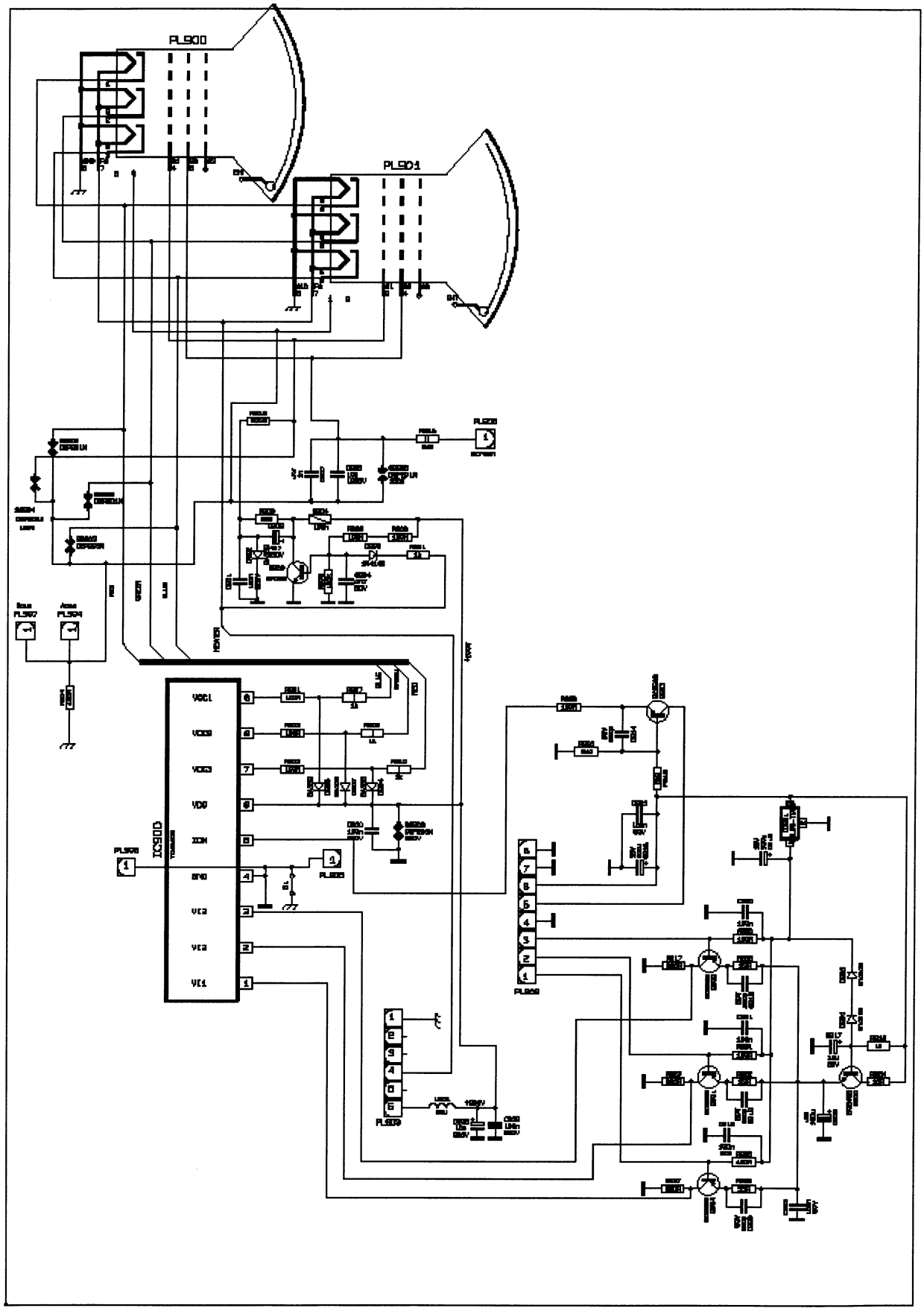

TR600
IC600
STV9379FA
PL602
PL601
PL604
PL605
PL606
PL603
DF SOCKET
FBT_AK33_ELDOR
TR601
HLDRV_AK19
Q602
BU2508AF
Q601
BC639
Q605
BC858B
Q600
BUK444
Q603
BC858B
IC601
TL431
Voltage
Hdriveout
HFLYBACK
DAF_VERT
B+_PROTECT
NOT:*===TUP DEGISKENLERI
VESTEL ELECTRONICS
TV R&D GROUP
004.sht
11AK45e2 DEFLECTION
Ver. 02
Rev.
DATE 03.09.2002
Author Deflection Group
Sheet 04 of 05


PL900
PL901
GND
G1
G2
G3
EHT
R912 100R
R913 2k2
PL905
screen
SG901 DSP201M
SG902 DSP201M
SG903 DSP201M
SG904 DSP201M 150V
SG905 DSP201M 150V
SG906 DSP201M 150V
C907 1kV 1n
C903 10n 1250V
R900 6M8
C902 4u7 250V
D902 BA159
D900 BF422
C931 100n 250V
R904 150k
R905 100k
R906 100k
R909 100k
D903 1N4148
R911 1k
C904 4n7 50V
HEATER
+200V
Aqua PL907
Aqua PL904
R914 100R
RED
GREEN
BLUE
IC900
TDA6108
VOC1
VOC2
VOC3
VDD
IOM
GND
VI3
VI2
VI1
R901 100R
R902 100R
R903 100R
R907 1k
R908 1k
R910 1k
D905 BA159
D907 BA159
D904 BA159
C900 100n 250V
PL908
PL906
S1
PL902
PL903
L901 22u
C905 10u 250V
C906 100n 250V
R928 100R
BC858B Q903
C914 50V 560p
R920 2k4
R919 8k2
C921 100n 50V
C916 16V 100u
IC901 LM317T
C915 16V 100u
C910 100n
R915 150R
R917 220R
R916 33R
BC858B Q902
C918 50V 220p
D900 1N4148
C911 100n
R924 150R
R923 220R
R922 33R
BC858B Q901
C919 50V 220p
C917 10u 50V
R918 1k
D901 1N4148
BC848B Q905
R924 10R
C912 100n 50V
R925 150R
R927 220R
R926 33R
BC858B Q904
C920 50V 220p
C913 100n 50V
C909 16V 100u

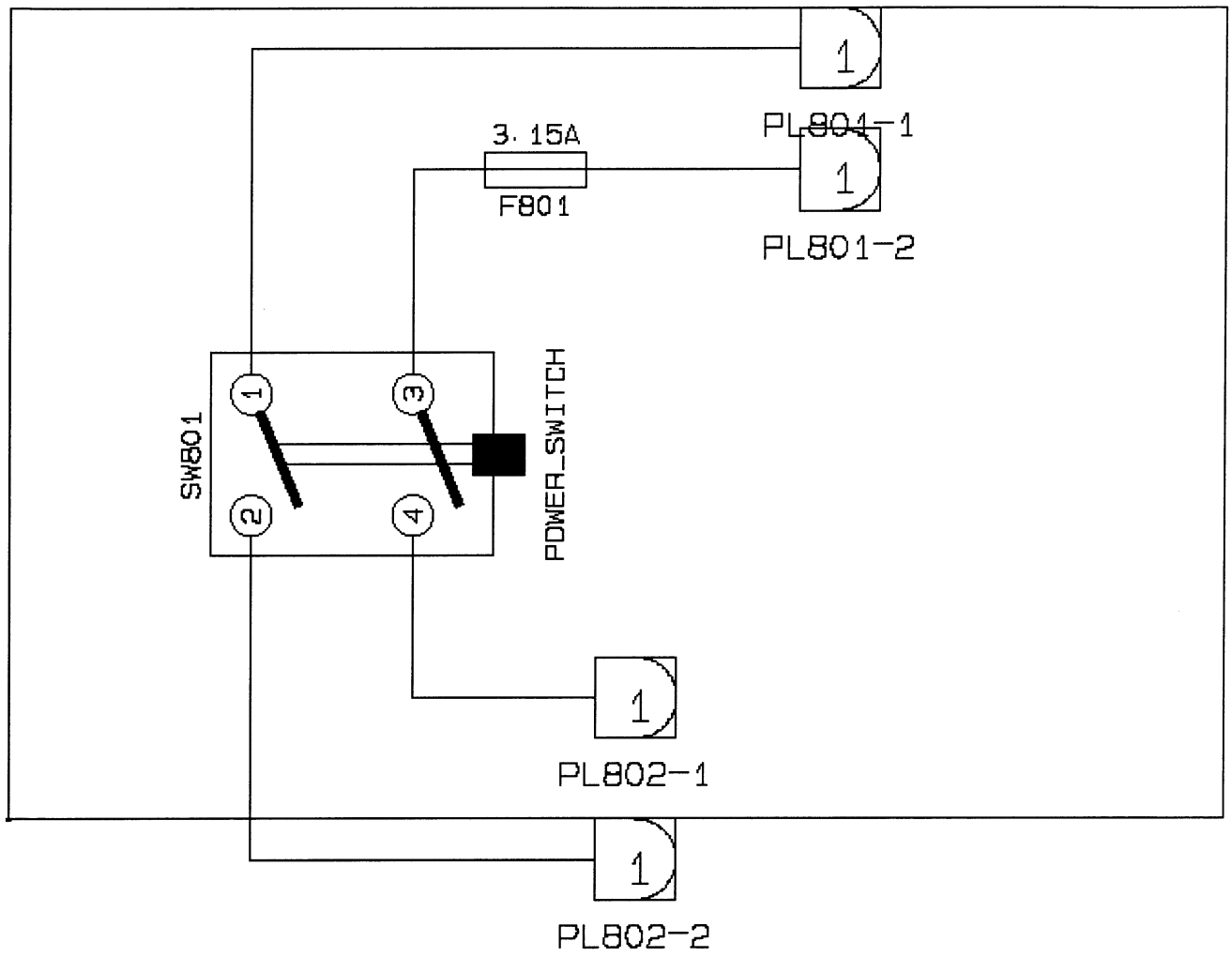

IC700
MSP34XXG
IC301
TDA7269A
IC704
TDA1308
S714-S715-S716-S717 FOR LINER STEREO ROAD
to subwoofer amp. card
external speaker out
front AV
FRONT_R
FROM DVD OR DVB
FROM DVD OPTIC OUT
OPTIC OUTPUT
HEADPHONE
VESTEL ELECTRONICS
TV R&D GROUP
005.sht
11AK45e2 SOUND
Ver. 02
Rev.
DATE 03.09.2002
Author Sound Group
Sheet 05 of 05



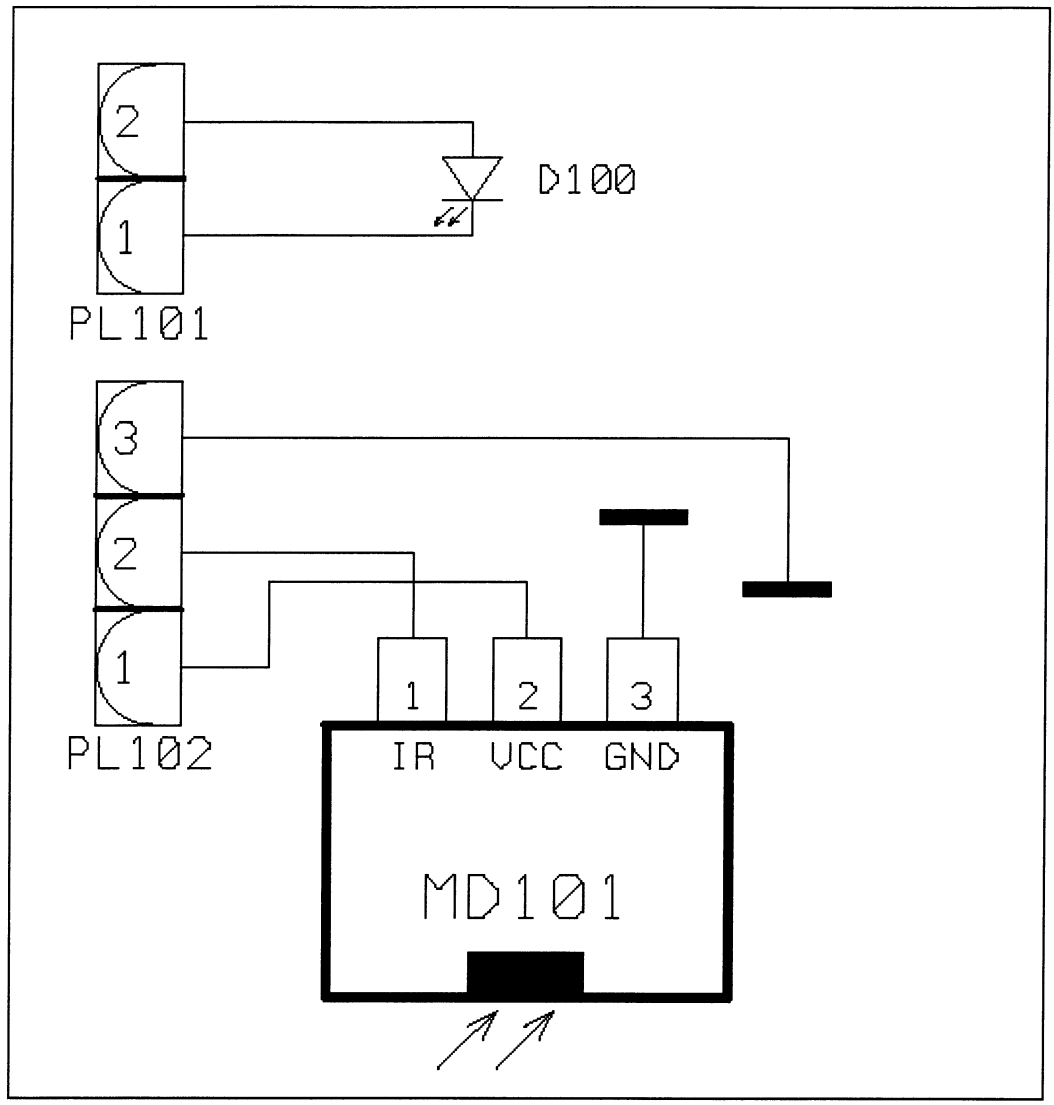
11SB107-4



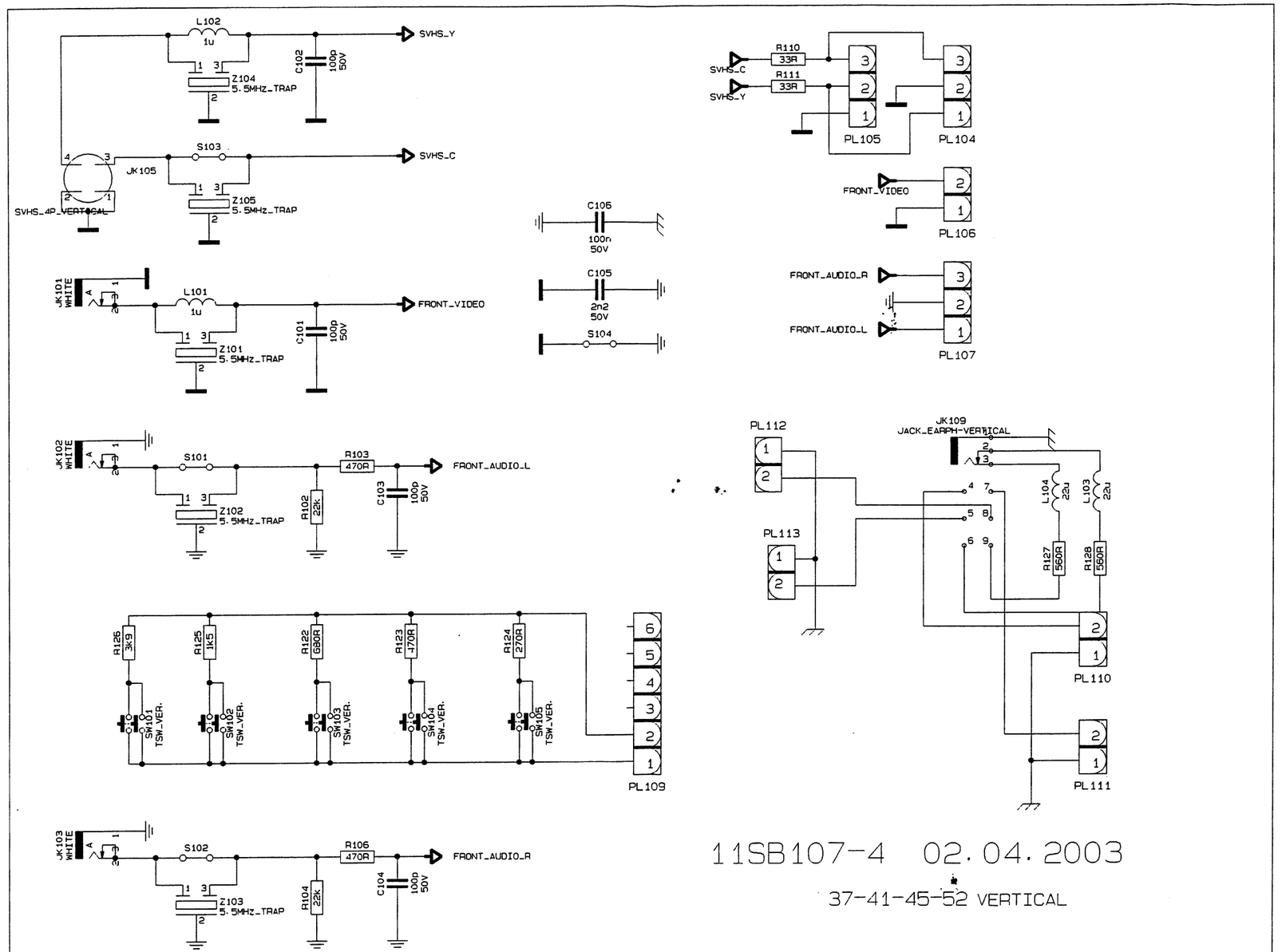
11TP45B-1


1
PL801-1
3. 15A
F801
1
PL801-2
SW801
1
2
3
4
POWER_SWITCH
1
PL802-1
1
PL802-2

11SW01-3

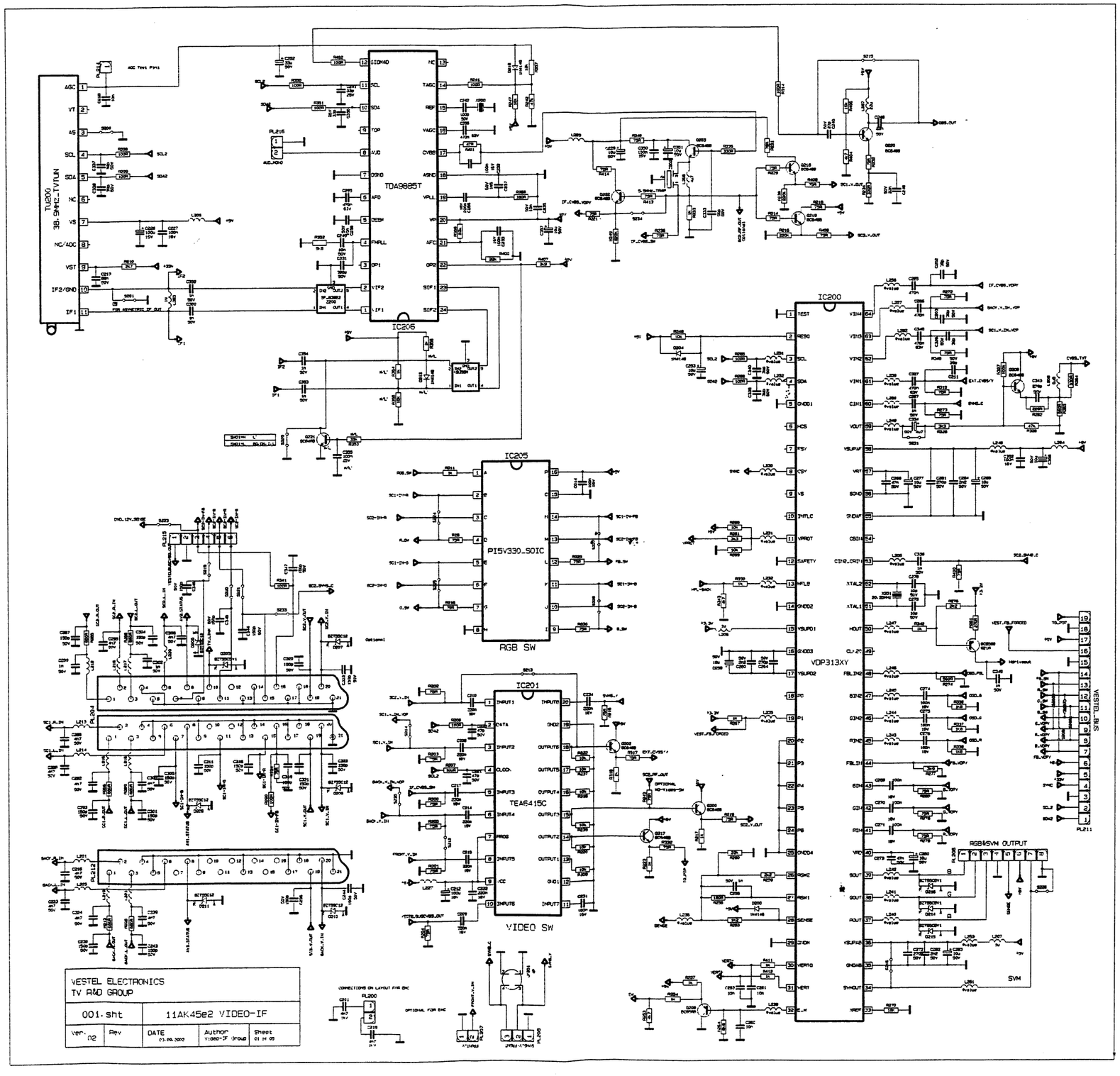


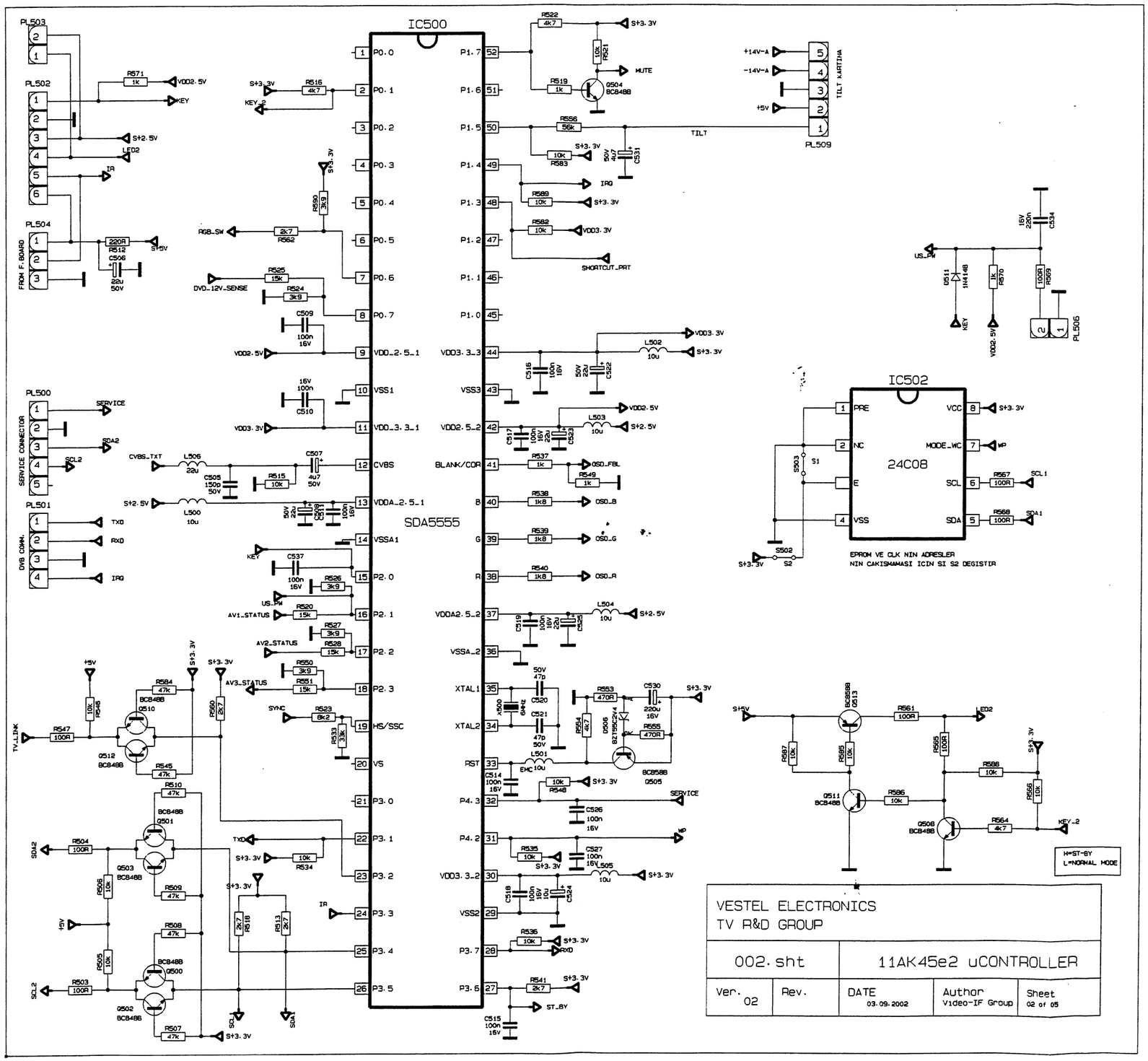
11LD13



11SB107-4 02.04.2003

37-41-45-52 VERTICAL


TU200
38.9MHz-TVTUN
TDA9885T
IC206
IC205
P15V330_SOIC
RGB SW
IC201
TEA6415C
VIDEO SW
IC200
VDP313XY
RGB&SVM OUTPUT
SVM
VESTEL_BUS
VESTEL ELECTRONICS
TV R&D GROUP
001.sht
11AK45e2 VIDEO-IF
Ver: 02
Rev
DATE 03.06.2002
Author video-IF Group
Sheet 01 of 05


IC500
SDA5555
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
VDD_2.5_1
VSS1
VDD_3.3_1
CVBS
VDDA_2.5_1
VSSA1
P2.0
P2.1
P2.2
P2.3
HS/SSC
VS
P3.0
P3.1
P3.2
P3.3
P3.4
P3.5
P1.7
P1.6
P1.5
P1.4
P1.3
P1.2
P1.1
P1.0
VDD3.3_3
VSS3
VDD2.5_2
BLANK/COR
B
G
R
VDDA2.5_2
VSSA_2
XTAL1
XTAL2
RST
P4.3
P4.2
VDD3.3_2
VSS2
P3.7
P3.6
PL503
PL502
PL504
PL500
PL501
PL509
PL506
SERVICE CONNECTOR
DVB COMM.
FROM F.BOARD
TILT KARTINA
R571 1K
R516 4k7
R522 4k7
R521 10K
R519 1k
Q504 BC848B
R556 56k
R583 10K
C531 50V 4U7
R589 10k
R582 10k
R590 3K3
R562 2k7
R525 15k
R524 3k9
C509 100n 16V
C510 16V 100n
R512 220R
C506 82U 50V
C516 100n 16V
C522 50V 22U
L502 10u
C517 100n 16V
C523 22U
L503 10u
C505 150P 50V
R515 10K
C507 4U7 50V
L506 22U
L500 10u
C508 50V 22U
C511 100n 16V
R537 1k
R549 1k
R538 1k8
R539 1k8
R540 1k8
C537 100n 16V
R526 3k9
R520 15k
R527 3k9
R528 15k
R550 3k9
R551 15k
R523 8k2
R533 33K
L504 10u
C519 100n 16V
C525 22U
X500 6MHz
C520 50V 47p
C521 50V 47p
R553 470R
C530 220U 16V
R554 4k7
D508 BZT55C2V4
R555 470R
L501 EMC 10u
C514 100n 16V
R548 10K
C526 100n 16V
R535 10K
C527 100n 16V
L505 10u
C518 100n 16V
C524 10U
R536 10K
R541 2k7
C515 100n 16V
C534 16V 220n
D511 1N4148
R570 1K
R569 100R
IC502
24C08
PRE
NC
E
VSS
VCC
MODE_WC
SCL
SDA
S503
S1
S502
S2
R567 100R
R568 100R
EPROM VE CLK NIN ADRESLER
NIN CAKISMAMASI ICIN S1 S2 DEGISTIR
R584 47K
R546 10K
R560 2K7
R547 100R
Q510 BC848B
Q512 BC848B
R545 47K
R510 47K
Q501 BC848B
Q503 BC848B
R504 100R
R506 10K
R509 47K
R508 47K
Q500 BC848B
Q502 BC848B
R505 10K
R503 100R
R507 47K
R518 2K7
R513 2K7
R534 10K
R561 100R
R587 10K
R585 10K
Q511 BC848B
R586 10K
Q508 BC848B
R564 4K7
R588 10K
R568 10K
ED2
KEY-2
H=ST-BY
L=NORMAL MODE
VESTEL ELECTRONICS
TV R&D GROUP
002.sht
11AK45e2 uCONTROLLER
Ver. 02
Rev.
DATE 03.09.2002
Author Video-IF Group
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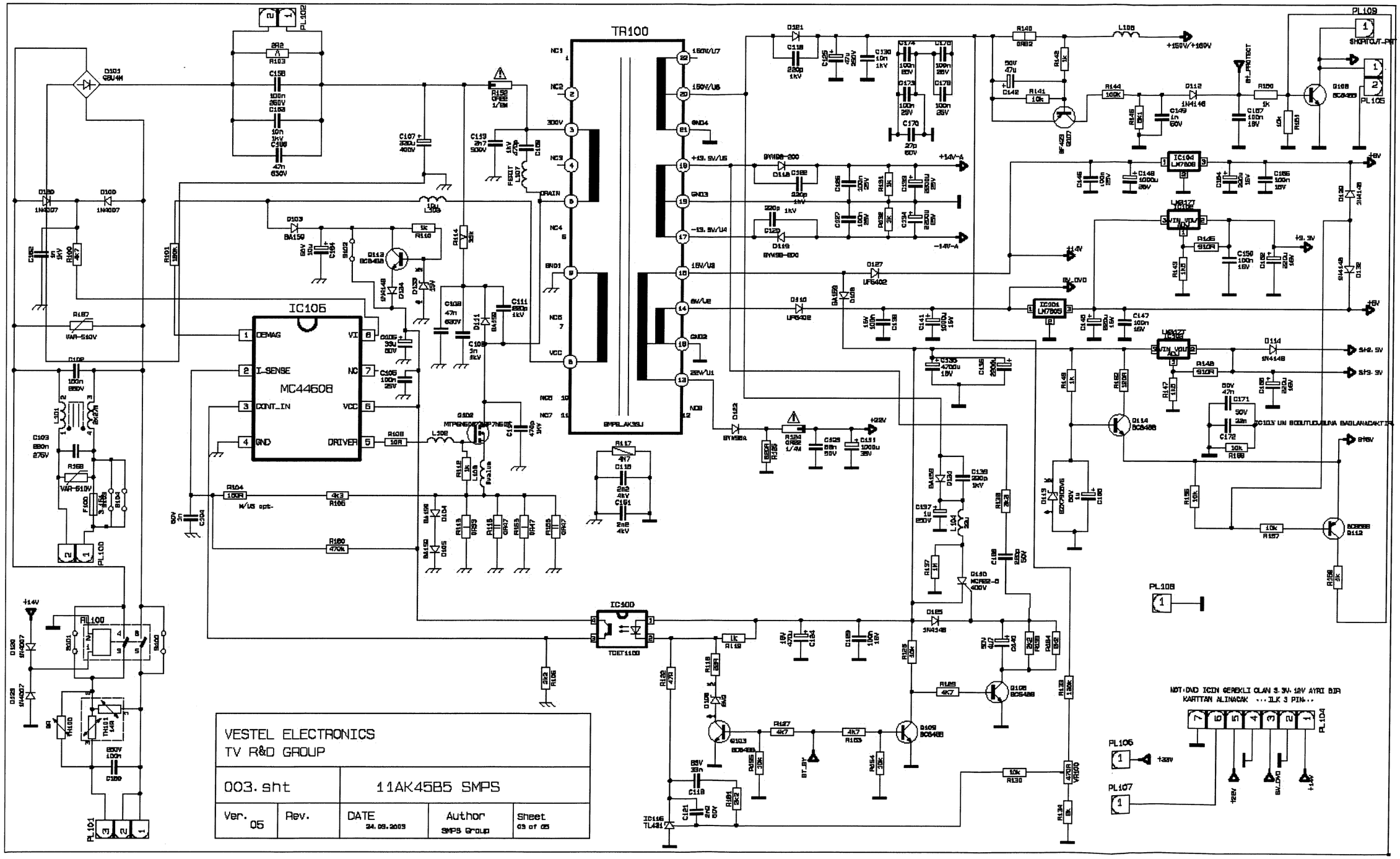
TR100
IC105
MC44608
DEMAG
I_SENSE
CONT_IN
GND
VCC
DRIVER
VI
NC
IC100
TCET1100
IC101
TL431
VESTEL ELECTRONICS
TV R&D GROUP
003.sht
11AK45B5 SMPS
Ver. 05
Rev.
DATE 24.09.2003
Author SMPS Group
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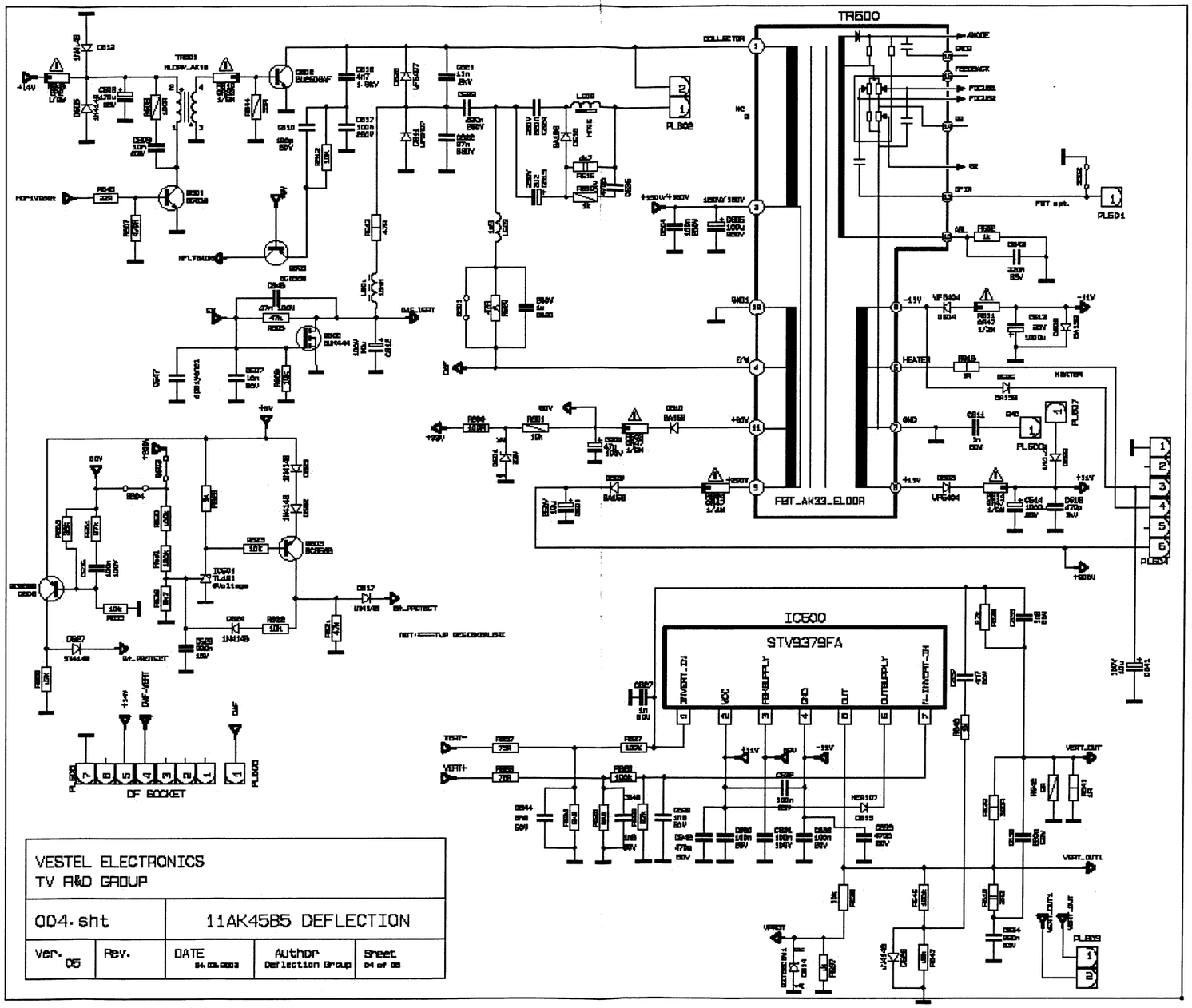
NOT:DVD ICIN GEREKLI OLAN 9.3V 12V AYRI BIR KARTTAN ALINACAK ...ILK 3 PIN...
PL102
PL109
PL105
PL108
PL106
PL107
PL104
PL101
PL100
SHORTCUT-PIN
+150V/+160V
+14V-A
-14V-A
+14V
+9.3V
+5V
8V_DVD
+12V
BT_PROTECT

11AK45B5-3


TR600
IC600
STV9379FA
FBT_AK33_EL00A
DF SOCKET
VESTEL ELECTRONICS
TV R&D GROUP
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